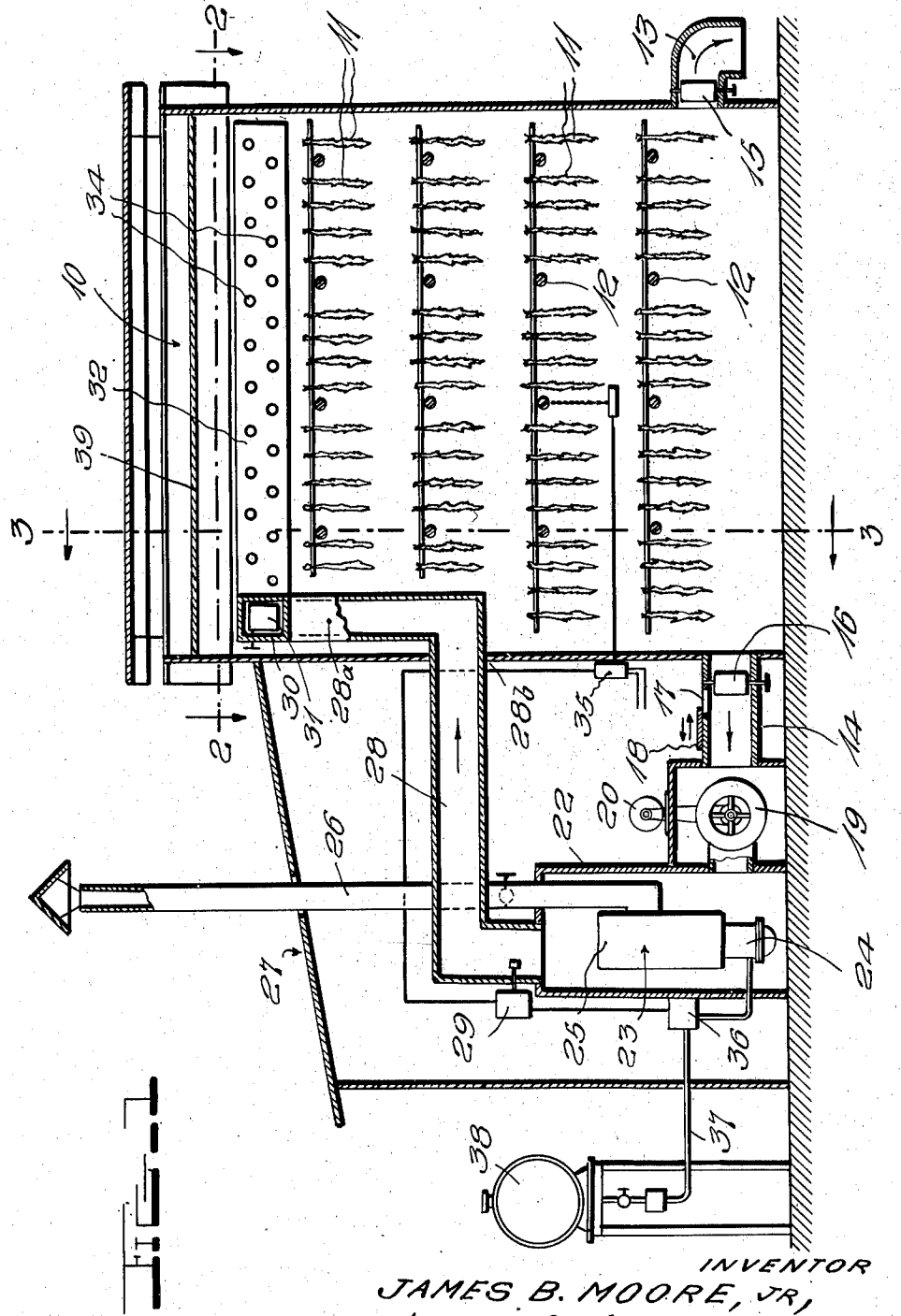
July 5, 1949. J. B. MOORE, JR 2,475,568

METHOD OF CURING BRIGHT-LEAF TOBACCO

Filed Jan. 23, 1945 2 Sheets-Sheet 1



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FIG. 1

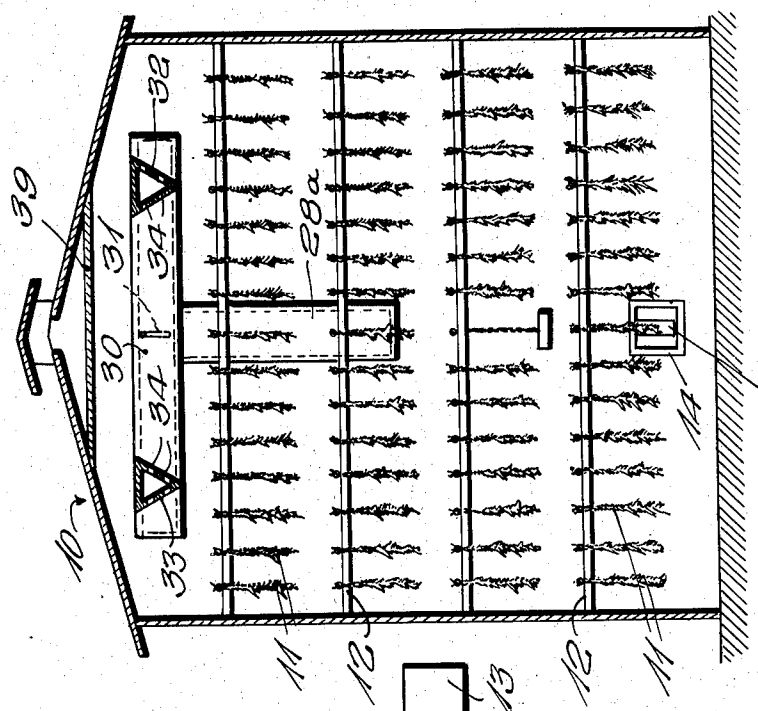
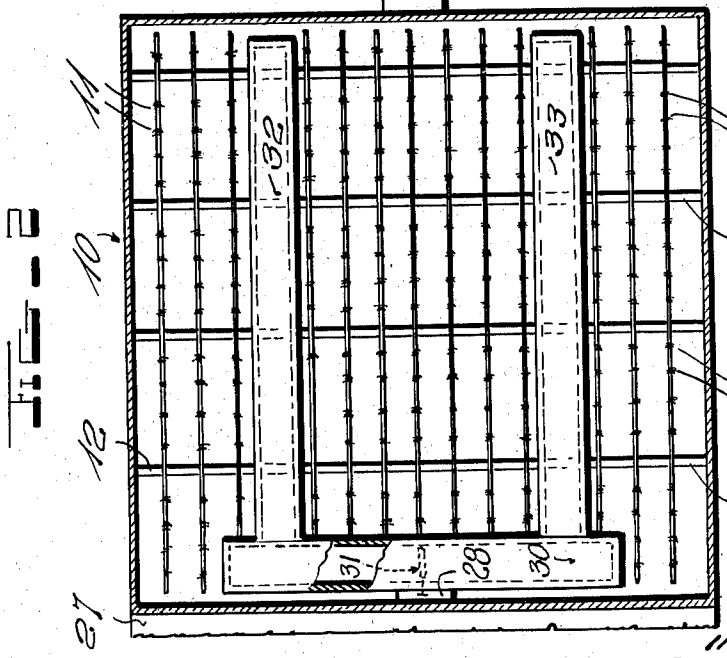


FIG. 2



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METHOD OF CURING BRIGHT-LEAF TOBACCO

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12 Claims. (Cl. 131—140)

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The present invention relates to the curing of tobacco leaves and more particularly, to tobacco leaves having the physical and chemical characteristics of tobacco leaves grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, identified by the United States Department of Agriculture as types 11 to 14, inclusive, type 11 being divided into sub-types 11A and 11B.

In accordance with the present invention there is provided a method of curing tobacco leaves which produces the cured tobacco in a relatively short period, said method being characterized by simplicity and economy in operation.

One object of the present invention is to yellow the tobacco in a short period of time while maintaining the relative humidity of the heated air above about 90% or 95% and below but adjacent the dew point without over-ripening the tobacco leaves, that is, spotting said leaves, said humidity preferably varying from about 95% to 98%.

Another object is to accomplish the yellowing process in a relatively short period of time, preferably varying from 36 to 48 hours, and in some cases in 30, 36 or 60 hours.

Another object is to accomplish the yellowing step under the conditions above set forth, while utilizing a composite circulating air-treatment medium comprising a predominating quantity of recirculated air and a small quantity of fresh air, just about sufficient to keep the composite circulating medium below the dew point, that is, to prevent the composite air from being saturated. If the relative humidity approaches 100%, water drops out and therefore it is best to operate at 95% to 98%.

Another object is to carry out the yellowing step under the conditions set forth while circulating the air through the tobacco curing chamber about every 2½ minutes to about 3 minutes. Another object is to effect the yellowing step at a temperature inhibiting any substantial drying of the tobacco leaves, said temperature being preferably below 100° F. and desirably 90° F. to 100° F.

Another object is to dry the yellowed tobacco in a relatively short period, preferably 24 to 48 hours while bringing the tobacco up from a temperature varying between 90° F. to 100° F. to a drying temperature which effects drying in said period of time, but inhibits sealing or "facing" of the tobacco leaves, that is, seals the tobacco cell

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structure so that the moisture on the inside of the leaves cannot be removed. Preferably, the tobacco during the drying period is brought up to a temperature varying between 120° F. and 130° F. although it may be brought up to 135° F. or even 140° F. and in some cases even up to a temperature of 170° F. But, at the higher temperatures there is a deteriorating change in the tobacco, sealing or "facing" beginning to appear at about 135° F. or 140° F.

A further object is to effect drying of the yellowed tobacco while using substantially fresh air, that is, no circulating air is used.

Another object is to effect "killing out" of the tobacco stems in a relatively short period of time, usually varying from about 24 to 48 hours, using a composite air medium comprising a predominating quantity of recirculated air and a small quantity of fresh air to prevent the composite air medium from building up a high humidity.

A further object is to recirculate air during the drying period every ½ minute to 2 minutes, and preferably 1 minute, that is, the air that enters the chamber at the beginning of the ½ minute period is completely removed from the chamber at the end of 2 minutes and a new cycle starts.

Another object is to effect "killing out" below 175° F. or 190° F., and preferably, below 150° F. under the conditions set forth.

In order that the present invention may be more clearly understood, reference is made to the accompanying drawing wherein Fig. 1 is a transverse section more or less diagrammatic of an apparatus for carrying out the present invention, Fig. 2 is a section taken on the line 2—2 of Figure 1 and Fig. 3 is a cross section taken on line 3—3 of Fig. 1.

Referring to the drawing, 10 represents a tobacco barn in which tobacco leaves 11 are hung, the latter being tied on sticks, the sticks of tobacco being supported on tier rails 12. The barn 10 is provided with an exit duct 13 and a return air duct 14, the former being provided with a pressure damper 15. The return air duct 14 is also equipped with a regulating damper 16 and the return air duct has an opening 17 with a slide cover 18 by which means fresh air can be admitted to the duct and to the system. A pressure blower 19 is operatively connected to the duct 14, said blower being equipped with an electrical or gasoline motor 20. The blower is operatively connected to the base of the jacket 22 of the furnace 23, the latter being equipped with a vaporizing oil burner means 24 which is connected

to the heat exchanger 25 provided with a flue pipe 26 passing through the roof of the shed 27. Operatively connected to the bonnet of the furnace is a supply duct 28 provided with a limit control 29, said control functioning to cut off and on the oil burner at a predetermined temperature, usually within a range of 100° to 200° F. The duct 28 passes into the barn 10, preferably centrally thereof, at the point 28b and is connected by means of a duct 28a to an auxiliary supplying duct 30 provided with a splitter damper 31. The auxiliary supply duct is operatively connected to distributing ducts 32 and 33 respectively, said ducts being of any appropriate shape but preferably triangular, and the sides thereof are provided with staggered apertures 34 whereby air is introduced into the barn and distributed evenly over the tobacco leaves therein. Suitably disposed outside of the tight barn 10 is the remote bulb thermostatic temperature control 35, preferably having a range from about 80° to 180° F.

The oil burner is provided with an automatic flow metering valve 36 which is connected by means of a pipe 37 to the oil tank 38. The thermostat 35 controls the off and on magnetic valve of the flow control valve 36.

The following is a specific example illustrating the present invention:

The barn 10 which is gas tight is filled with about 6,000 pounds of tobacco, the amount which can be introduced into a barn which is 16' x 16' x 16'. The tobacco leaves are leaves which have been primed from the tobacco stalks and tied onto sticks, said sticks being hung over tier rails until the barn is filled. The field ripened tobacco is introduced into the barn 10 as quickly as possible after the priming. The object of introducing the tobacco leaves into the barn 10 as soon as possible after the priming is to prevent deterioration of the tobacco. It may be stated that tobacco of the character being treated by the present invention is rather perishable, it being well-known that if the tobacco is left in the fields and subjected to sunlight for a period of a day's time, it will materially depreciate in value. It is therefore desirable, in order to preserve the high quality of the tobacco, that the tobacco be introduced into the barn as soon as practicable.

It is quite desirable that the process of yellowing, drying and "killing" the tobacco be started as soon as practicable after the tobacco leaves have been introduced into the barn 10. However, if the tobacco in the barn is kept dark and away from sunlight no appreciable harm will result in 24 to 36 hours. However, as stated, it is the preferred procedure that after the barn is filled with about 6,000 pounds of field ripened tobacco leaves, to initiate the treatment of the tobacco leaves in accordance with the present invention. It may be stated that the field ripened tobacco contains between 80% to 88% of moisture and one of the objects of the present invention is to complete the ripening of the tobacco and then to dry the tobacco to substantially remove the moisture content without damaging the quality of the tobacco.

After the tobacco leaves have been introduced into the barn 10, the damper 15 on the exit duct 13 is closed and the slide cover 18 on the return duct 14 is pushed forward to about one inch of the edge of the opening 17 so as to allow a small amount of fresh air to be admitted to the return duct 14. Damper 16 is placed in its full open position to allow free access of return air from the barn 10 to the return air duct 14. The belt connecting blower 19 and the motor 20 is then adapted on operation to deliver about 1,500 C. F. M. of air composed of 100 cubic feet of fresh air and 1,400 cubic feet of return air to the furnace 23. The small amount of outside fresh air functions to keep the relative humidity of the circulated air from reaching the dew point where, as is well-known, condensation occurs. If condensation forms on the tobacco leaves, the latter become oxidized and assume what is known in the art as a "spongy state." As stated, the function of the fresh air is to keep the recirculated air from reaching the dew point and therefore, functionally stated, enough outside fresh air should be introduced or combined with the recirculated air to maintain the relative humidity of the mixture below the dew point. It is therefore recognized that the amount of fresh air introduced at this point may be somewhat varied and still come within the spirit of the present invention.

After the dampers and valves have been adjusted as above set forth, the thermostat 35 set to 90° to 95° F., or 100° F. and the limit control 29 set at approximately 130°, then the burner 24 is started, the blower 19 having been placed in operation. The mixture of air produced as above set forth then begins to circulate through the barn 10.

It is desired to point out that the relative humidity of the recirculated air is maintained within a range which will allow the tobacco leaves to "yellow" without any substantial drying. In accordance with the present invention it is found that the most satisfactory results are obtained during the yellowing period when the recirculated air is maintained with a relative humidity of 95 to 98%. Less satisfactory results are obtained when the humidity is maintained between 90 to 95%. It is therefore desired not to limit the invention to a range of humidity during yellowing of 95 to 98%.

When processing a batch of 6,000 pounds of tobacco it has been found that operating with the above quantity of air and under the above conditions of humidity, the tobacco is yellowed in a period ranging from about 36 to 60 hours. Naturally, this period will vary somewhat depending on the physical and chemical characteristics of the tobacco, the size of the tobacco leaves, and their state of field ripeness. If the tobacco leaves are thick and the stems are large and only partially ripened, the time of yellowing under the conditions set forth will approximate the period of 60 hours. If the tobacco leaves are thinner and the stems are smaller, the time of yellowing under the conditions above set forth may decrease to about 50 hours. Tobacco leaves have been satisfactorily yellowed using the present invention when treated under the conditions set forth for a period of 36 and 40 hours respectively. Depending on the above circumstances the time of yellowing under the conditions set forth may vary from 36 to 48 hours, 36 to 55 hours or 36 to 60 hours.

It is desired to point out that for a burner of the size set forth and operating under the conditions set forth that there is a substantially complete recirculation of air in the barn every 2½ to 3 minutes. This rate of air movement through the barn will be the same regardless of the size of the barn used for curing the tobacco leaves. The rate of flow of the air introduced into the barn during the yellowing period should be increased so that the air is recirculated at the rate

above set forth, that is, a complete recirculation of all the air in the barn occurs every 2½ to 3 minutes. Using a barn 20' x 20' x 16', and having a volume of 6,400 cubic feet, the amount of cubic feet of air circulated through the barn would be increased to 2,100. During a three-minute cycle air would be recirculated at the rate of 6,025 cubic feet of recirculated air and 375 cubic feet fresh air, making a total of 6,400 cubic feet for the three-minute cycle. Using the 16' x 16' x 16' barn for a three-minutes period the total amount of air circulated would be 4,500 cubic feet of which 300 cubic feet would be fresh air and 4,200 cubic feet recirculated air.

When the tobacco leaves reach their desired yellow color as indicated by visual inspection, the yellowing step is terminated and the drying step is initiated by first setting the thermostat **35** to about 100° F. to 120° F. or 130° F. Thereafter the damper **15** in the exhaust duct **13** is placed in its full open position, the return air damper **16** is placed in its full closed position, and the belt connecting the motor and fan is placed in its maximum position for the full operation of the blower. Air is drawn in through the opening **17** into the return air duct **14** and is forced by the blower **19** through the duct **28**, preferably at the rate of 4,000 C. F. M. From the duct **28** the air traveling at the rate set forth is introduced into the barn **10**, preferably for a period varying between 24 to 48 hours. The air functions to dry the tobacco leaves and the temperature of the tobacco will gradually increase during the time period set forth from 95° F. to about 120° F. or 130° F. It is desired to point out that by maintaining this lower temperature and increasing the air flow across the tobacco the rate of drying is increased without damaging the cell structure of the tobacco and, the volatile oils of the tobacco are retained. Therefore, while 120° F. or 130° F. has been set forth as the maximum or preferred temperature during the drying period, it is recognized that even using the exeedingly high rate of 4,000 cubic feet of fresh air per minute that the temperature of drying may be increased to 130° F., 135° F., or even 140° F. Experiments have been carried out using a drying temperature as high as 160° F. or 170° F. but the best and most satisfactory results are obtained when using a drying temperature of 120° F. to 130° F. If the temperature is increased over about 120° F. or 130° F., with each increase there is usually a deteriorating change in the quality of the tobacco until complete facing occurs which seals the cell structure so that moisture on the inside of the leaf cannot be removed. This is highly undesirable.

During the drying period the humidity of the air leaving the exit duct **13** will change from approximately 98% relative humidity at the initiation of the drying period to approximately 25% to 30% and substantially all of the moisture has been taken out of the tobacco leaves, but a considerable amount of moisture still is left in the tobacco stems. The amount of moisture present in the leaves will depend upon the particular kind of tobacco being treated and its growing history.

During the drying period the air in the barn is changed approximately every minute, this having given the most satisfactory results. The general statement as to the frequency of change is that the air may be changed in the barn **10** during a period ranging in length from 45 seconds to about 1, 1½ or 2 minutes. The rate of drying may be increased to approximately one-half minute air change but care would have to be exercised to inhibit facing of the tobacco. It should be borne in mind that the rate of evaporation of the moisture from the tobacco leaves should be governed by the total amount of heat being introduced into them and if this rate is accelerated beyond a certain point the cell structure would be damaged and facing would occur.

After the tobacco leaves have been properly dried it is necessary to dry the tobacco stems and this stage is technically known as the "killing out" stage. At the end of the leaf-drying period, the damper **15** and exit duct **13** are practically closed, that is, only a small opening remains sufficient to bleed off the excess air from the barn. The damper **16** in the return air duct **14** is then placed in its full open position and the slide damper **18** is practically closed to within one or two inches of its full shut position. This will allow a small quantity of fresh air to enter the return air duct **14** and be mixed with the recirculated air from the barn **10**. At approximately the same time the thermostat **35** is set to about 150° F. to 190° F. The limit control **29** is then set in its full open position and preferably at 250° F. During the "killing out" period the object is to gradually increase the temperature of the tobacco and of the air circulating in the barn to that point which is sufficient to remove the remaining moisture in the tobacco stems, preferably the tobacco temperature and that of the circulating air being allowed to reach about 150° F., but may be as high as 175° F. of 190° F. After the moisture has been removed from the tobacco leaves during the drying period, the increase in temperature will not have any deleterious effect upon the properties or the quality of the dried tobacco leaves. During the "killing out" period, the air is circulated at approximately the same rate as used during the drying period, it being pointed out, however, that during the drying period all fresh air is used and that during the "killing out" period only about 10% fresh air is introduced into the barn. In other words, at any given period of time the circulating air in the barn comprises 90% of old recirculated air and 10% of fresh air. During the "killing out" period a small portion of the total contents circulated through the barn **10** is exhausted through the exhaust duct **13** and to compensate for this loss of air, a small amount of fresh air is let into the barn to keep the circulated air from building up to a high humidity. Usually it is best to maintain the relative humidity of the air circulating in the barn **10** during the "killing out" period as low as possible and generally within a range of 10% to 15%. At the initiation of the "killing out" period the humidity of the circulating air will probably be in the neighborhood of 20%, 25% or 30%.

The "killing out" period will usually range from 24 to 48 hours depending upon the physical and chemical characteristics of the tobacco and depending on the thickness of the stems. It is preferred that during the "killing out" period that there be a complete air recirculation every minute although here again this may be reduced to one-half minute or may be increased to 1¼, 1½, 1¾, or 2 minutes. The total amount of air circulated per minute through a barn 16' x 16' x 16' is 4,000 cubic feet, of which approximately 7½ to 15%, but preferably 10% is fresh air.

It is desired to point out that the tobacco stems should be substantially completely dried so that when the tobacco is exposed to the unconditioned air it will not readily absorb moisture and in

doing so produce what is known as "swell stems." Generally, the moisture content should be reduced as low as possible and it usually varies between 3½ to 8%, but it is most desirable to reduce the moisture content to about 5%.

The temperatures during the "killing out" period are well below the kindling point of the tobacco thereby alleviating any possibility of fire.

The present invention provides a process for the curing of tobacco that is reasonably controllable, is economical from the standpoint of manpower use and produces a more uniform product with a slight increase of the weight of the finished product.

The present invention substantially decreases the fire hazard as there are no direct radiating surfaces within the barn which could cause at any time a temperature near the kindling point of tobacco.

It is well-known that during the yellowing period the tobacco gives off a gas including ethylene gas and if this gas is allowed to become too highly concentrated at any portion of the barn or other treatment container, it will over-ripen the tobacco leaves. Heretofore it has been necessary during the yellowing period to keep the relative humidity of the treatment gas or air to around 80% to 85% in order to prevent the ethylene gas from damaging the tobacco. In prior practice, when the air in the barn containing the sticks of tobacco became stagnant, then the barn was heated and the current of air was generated, said current moving the ethylene gas out of the barn and allowing fresh air to enter the barn. When this was done the relative humidity was lowered as a result of the introduction of fresh air into the barn. Because in the present process the air in the barn is not allowed to become stagnant and a small quantity of fresh air is introduced at all times, the concentration of ethylene gas present per cubic feet of air is kept exceedingly low. Because of the absence of stratified layers of ethylene gas which would over-ripen the tobacco in localized areas, it is not necessary to introduce a large amount of fresh air bringing the concentration of ethylene gas too low to function usefully as a ripening agent, and further, it is possible to operate at a humidity of 90% to 98%, and preferably 95% to 98%. If the relative humidity of the circulating air in the old process of ripening and yellowing tobacco were raised to 95% to 98%, then the tobacco leaves would become over-ripened, that is, sections of a particular leaf would have brown spots indicating over-ripening.

Practically all of the curing barns now in use are provided with a ventilator and this has been shown in the drawings. However, in accordance with the present invention the barn is airtight and therefore the barns now in use are made airtight by sealing off the ventilator by means of a sealing panel 39 which may be made of any desirable materials such as plywood, wallboard, or wooden boards.

In accordance with the present invention the yellowing of the tobacco is carried out by subjecting the tobacco to treatment with a circulating current of air preferably having a temperature varying between 90° F. and 100° F., and a relative humidity of the character herein set forth, but most desirably varying from about 95% to 98%. Thereafter the tobacco is dried by subjecting it to a current of air which may vary from 120° F. to 160° F. but preferably not higher than 130°, 135° or 140° F. The tobacco stems are then subjected to a "killing out" period by treating the tobacco with a circulating current of air having a temperature varying between about 140° F. to about 170° F.

In the best form of the invention the tobacco is yellowed by subjecting it to a circulating current of air for a period of time varying from about 36 to 60 hours, said air being heated to a temperature which inhibits any substantial drying of the tobacco leaves, the circulated current of air having a relative humidity of above about 90% or 92%, and below but adjacent the dew point, that is, somewhat below 100% saturation, the dew point being taken as 100%. If the air has a humidity of 98%, 98.5% or 97%, it is then below but adjacent the dew point within the terminology herein used. The current during the yellowing period comprises a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point. Thereafter the yellowed tobacco is dried for a period of time varying from about 24, or in some cases 20 hours, to about 48 hours while gradually increasing the temperature of the tobacco to about 130° F. The tobacco is simultaneously subjected to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state. The so-treated tobacco is then subjected to a current of heated air for the "killing out" period varying from about 20 or 24 hours to about 48 hours while gradually increasing the temperature of the tobacco from the temperature during the drying period to about 170° F. and preferably about 150° F. The heated air during the "killing out" period decreases in relative humidity and is relatively dry at the end of the "killing out" period.

The apparatus herein set forth is claimed in applicant's co-pending application Serial No. 706,242, filed October 28, 1946.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of heated air which inhibits any substantial drying of the tobacco and has a relative humidity above about 90% and below but adjacent the dew point, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to about 130° F. while simultaneously subjecting the tobacco to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and subjecting the so-treated tobacco to a circulating current of heated air for a "killing out" period of time varying between from about 24 to about 48 hours while gradually increasing the tempera-

ture of the tobacco below a maximum of about 170° F. by passing over the tobacco a current of heated air, the relative humidity of which decreases during the "killing out" to a relatively dry state.

2. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of heated air which inhibits any substantial drying of the tobacco and has a relative humidity above about 95% and below but adjacent the dew point, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to about 130° F. while simultaneously subjecting the tobacco to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and subjecting the so-treated tobacco to a circulating current of heated air for a "killing out" period of time varying between from about 24 to about 48 hours while gradually increasing the temperature of the tobacco below a maximum of about 150° F. by passing over the tobacco a current of heated air, the relative humidity of which decreases during the "killing out" to a relatively dry state.

3. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of heated air which inhibits any substantial drying of the tobacco and has a relative humidity varying between from about 95% to about 98%, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to about 130° F. while simultaneously subjecting the tobacco to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and subjecting the so-treated tobacco to a circulating current of heated air for a "killing out" period of time varying between from about 24 to about 48 hours while gradually increasing the temperature of the tobacco below a maximum of about 170° F. by passing over the tobacco a current of heated air, the relative humidity of which decreases during the "killing out" to a relatively dry state.

4. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of air having a temperature varying from about 90° F. to about 100° F. and a relative humidity above 90% and below but adjacent the dew point, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to about 130° F. while simultaneously subjecting the tobacco to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and subjecting the so-treated tobacco to a circulating current of heated air for a "killing out" period of time varying between from about 24 to about 48 hours while gradually increasing the temperature of the tobacco below a maximum of about 170° F. by passing over the tobacco a current of heated air, the relative humidity of which decreases during the "killing out" to a relatively dry state.

5. The method of claim 1 wherein the circulating air is completely circulated through the curing chamber during the yellowing period every 2½ minutes to 3 minutes; during the drying period every ¾ of a minute to 2 minutes; and during the "killing out" period every ½ minute to 2 minutes.

6. The method of claim 1 wherein the circulating air is completely circulated through the curing chamber during the yellowing period every 2½ minutes to 3 minutes; during the drying period every 1 minute; and during the "killing out" period every 1 minute.

7. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of heated air which inhibits any substantial drying of the tobacco and has a relative humidity above about 90% and below but adjacent the dew point, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to between about 120° and 130° F. while simultaneously subjecting the tobacco to a current of cir-

culating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and "killing out" the tobacco stems of the so-treated tobacco by subjecting the latter to a circulating current of heated air while gradually increasing the temperature of the tobacco below a maximum of 170° F. by the passing of said heated current of air over the tobacco, the relative humidity of the heated air decreasing during the "killing out" period to a relatively dry state.

8. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of heated air which inhibits any substantial drying of the tobacco and has a relative humidity above about 90% and below but adjacent the dew point, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to between about 120° and 130° F. while simultaneously subjecting the tobacco to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and subjecting the so-treated tobacco to a circulating current of heated air for a "killing out" period of time varying between from about 24 to about 48 hours while gradually increasing the temperature of the tobacco below a maximum of about 170° F. by passing over the tobacco a current of heated air, the relative humidity of which decreases during the "killing out" to a relatively dry state.

9. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of heated air which inhibits any substantial drying of the tobacco and has a relative humidity above about 90% and below but adjacent the dew point, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to between about 120° and 140° F. while simultaneously subjecting the tobacco to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and subjecting the so-treated tobacco to a circulating current of heated air for a "killing out" period of time varying between from about 24 to about 48 hours while gradually increasing the temperature of the tobacco below a maximum of about 170° F. by passing over the tobacco a current of heated air, the relative humidity of which decreases during the "killing out" to a relatively dry state.

10. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of heated air which inhibits any substantial drying of the tobacco and has a relative humidity above about 90% and below but adjacent the dew point, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to between about 120° and 140° F. while simultaneously subjecting the tobacco to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and "killing out" the tobacco stems of the so-treated tobacco by subjecting the latter to a circulating current of heated air while gradually increasing the temperature of the tobacco below a maximum of 170° F. by the passing of said heated current of air over the tobacco, the relative humidity of the heated air decreasing during the "killing out" period to a relatively dry state, said heated air comprising recirculated air and between 7½% and 15% of fresh air.

11. The method of curing tobacco consisting of stems and leaves, said tobacco having the characteristics of tobacco grown in Florida, Georgia, South Carolina, the eastern North Carolina belt, the middle belt of North Carolina and Virginia, and the old belt of North Carolina and Virginia, said tobacco being known as bright-leaf flue-cured tobacco, comprising confining the tobacco in a substantially airtight curing chamber having inlet and outlet ducts, yellowing the tobacco by subjecting it for a period varying from about 36 hours to about 60 hours to a current of heated air which inhibits any substantial drying of the tobacco and has a relative humidity above about 90% and below but adjacent the dew point, said current of air comprising a predominating quantity of recirculated air and a small quantity of fresh air which keeps the composite circulating air-medium below the dew point, drying the yellowed tobacco for a period of time varying from about 24 to about 48 hours while gradually increasing the temperature of the tobacco to between about 120° and 140° F. while simultaneously subjecting the tobacco to a current of circulating fresh air, the relative humidity of which at the outlet of the curing chamber is gradually reduced from adjacent the dew point to a relatively dry state, and "killing out" the tobacco stems of the so-treated tobacco by subjecting the

latter to a circulating current of heated air comprising recirculated air and between 7½% and 15% of fresh air for a "killing out" period of time varying between about 24 and 48 hours while gradually increasing the temperature of the tobacco below a maximum of 170° F. by the passing of said heated current of air over the tobacco, the relative humidity of the heated air decreasing during the "killing out" period to a relatively dry state.

12. The method of claim 11 wherein the circulating air is completely circulated through the curing chamber during the yellowing period every 2½ minutes to 3 minutes; during the drying period every ¾ of a minute to 2 minutes; and during the "killing out" period every ½ minute to 2 minutes.

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