United States Patent

Wilson

[15] 3,664,034

[45] May 23, 1972

[54] TOBACCO BULK CURING SYSTEM WITH IMPROVED CURING AIR FLOW RATE CONTROL

[72] Inventor: **Robert W. Wilson,** Charlotte, N.C.

[73] Assignee: **R. H. Bouligny, Inc.,** Charlotte, N.C.

[22] Filed: **Sept. 23, 1970**

[21] Appl. No.: **74,678**

[52] **U.S. Cl.** .....**34/225,** 131/140, 263/19 D

[51] **Int. Cl.** **A24b 1/02**

[58] **Field of Search** .....263/19 D; 34/225, 219 D, 54; 131/140

[56] **References Cited**

UNITED STATES PATENTS

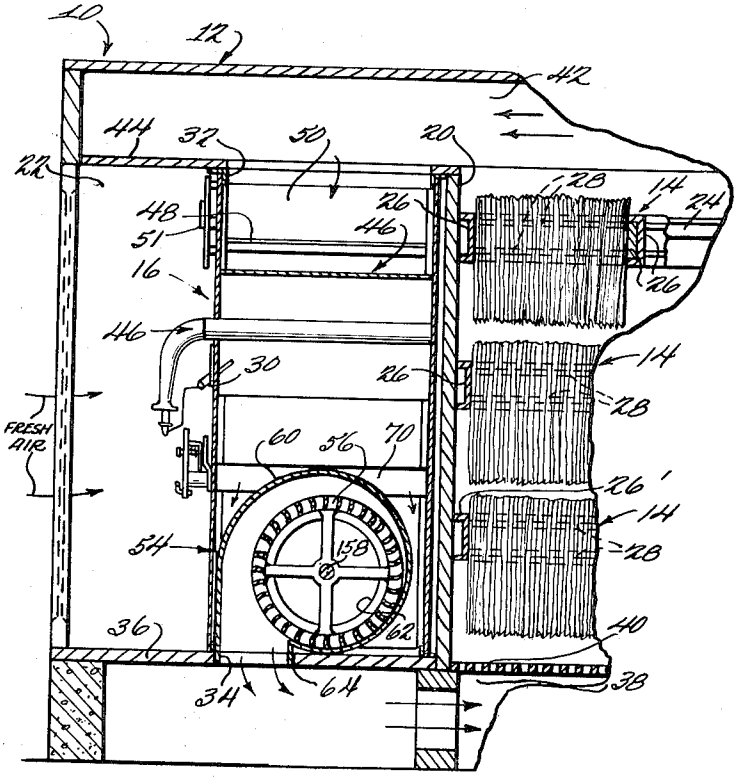
3,110,326	11/1963	Hassler	131/140 R
3,134,583	5/1964	Wilson	263/19 D
3,244,445	4/1966	Wilson	294/5.5

Primary Examiner—Frederick L. Matteson
Assistant Examiner—Harry B. Ramey
Attorney—Cushman, Darby & Cushman

[57] **ABSTRACT**

A system of curing flue-cured tobacco in bulk including a barn structure having perforated floor defining a curing air inlet space therebelow and tobacco loading and curing space thereabove for receiving and supporting a plurality of bulk curing racks disposed in side-by-side relation and in a plurality of vertically spaced tiers, a return air space above the loading space and a curing air conditioning and circulating assembly including a housing having an inlet communicating with the upper return air space, an outlet communicating with the lower curing air space, damper controlled fresh air inlets adjacent the upper end thereof, an air heater, a blower and an improved air throttling mechanism for controlling the amount of curing air circulated throughout the cure so that (1) the yellowing of the leaves is accomplished with the curing air at the desired temperature and relative humidity flowing at a relatively slow rate within an operative range of between 10 and 50 cubic feet per minute for each square foot of effective curing area, and within a preferred range of 40 to 45 cfm and (2) drying of the leaves is accomplished with the curing air at the desired temperatures and relative humidities flowing at a relatively high rate within an operative range of 50 to 120 cfm for each square foot of effective curing area with an increase of at least 10 percent of the flow rate during yellowing and within a preferred range of 55 to 75 cfm and an increase of at least 30 percent.

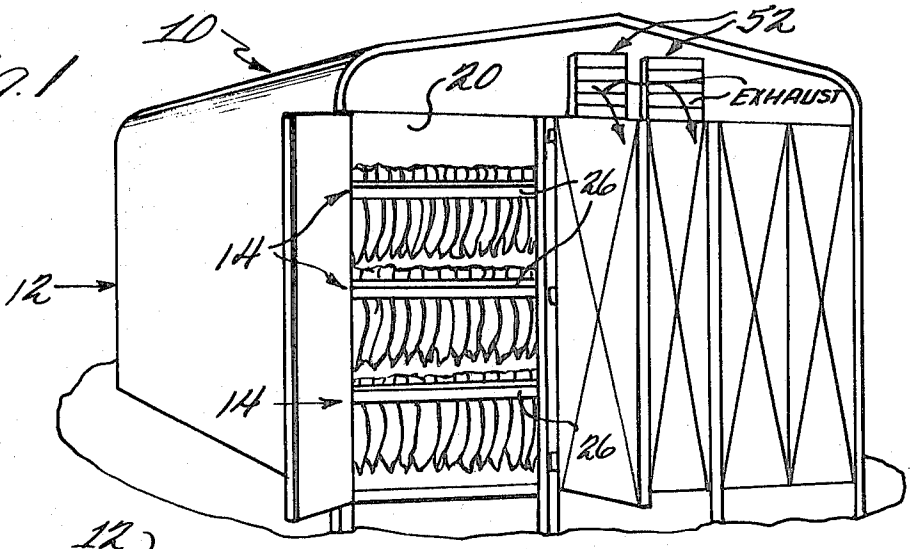
5 Claims, 5 Drawing Figures

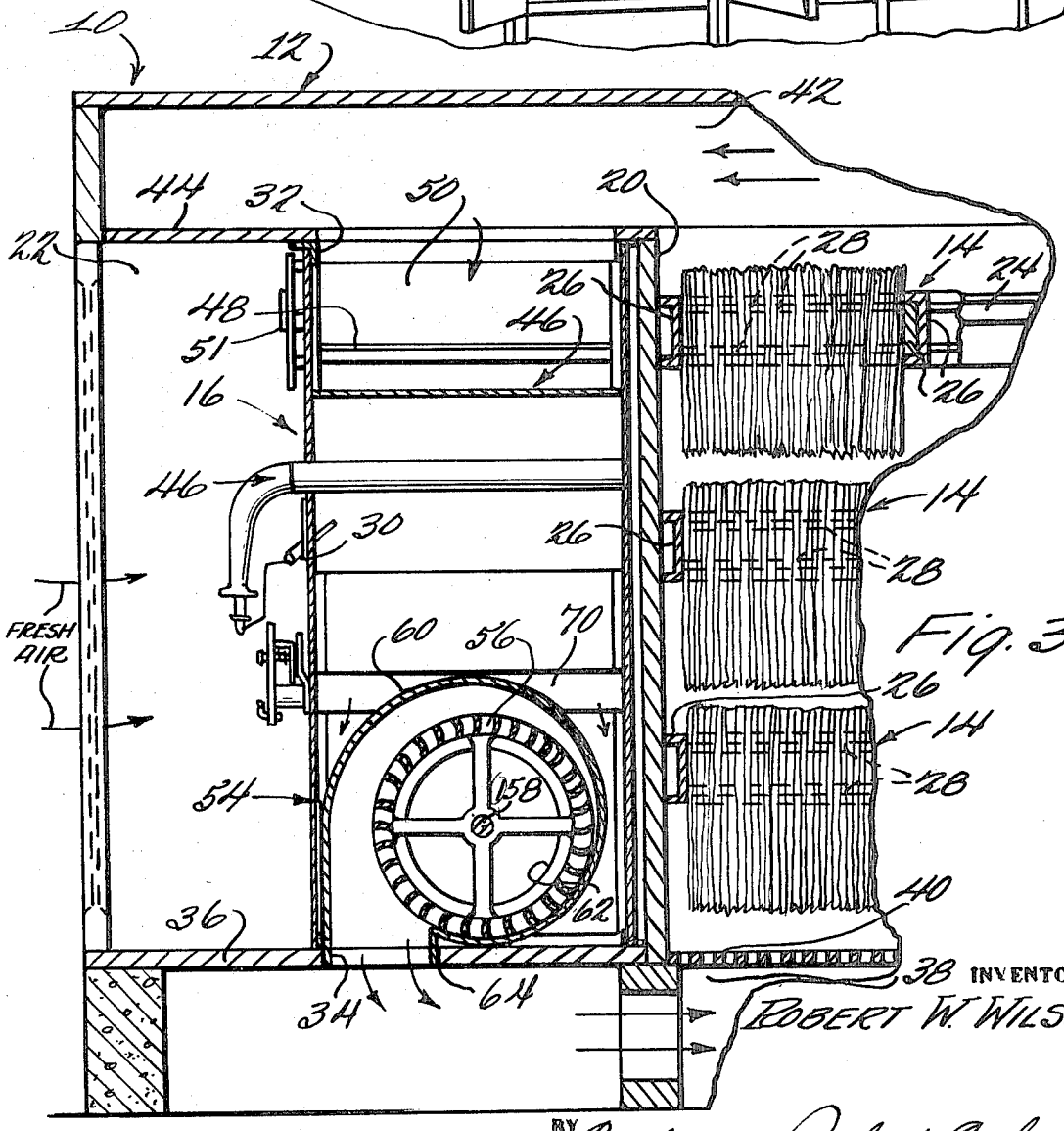


Patented May 23, 1972 3,664,034

3 Sheets-Sheet 1

Fig. 1





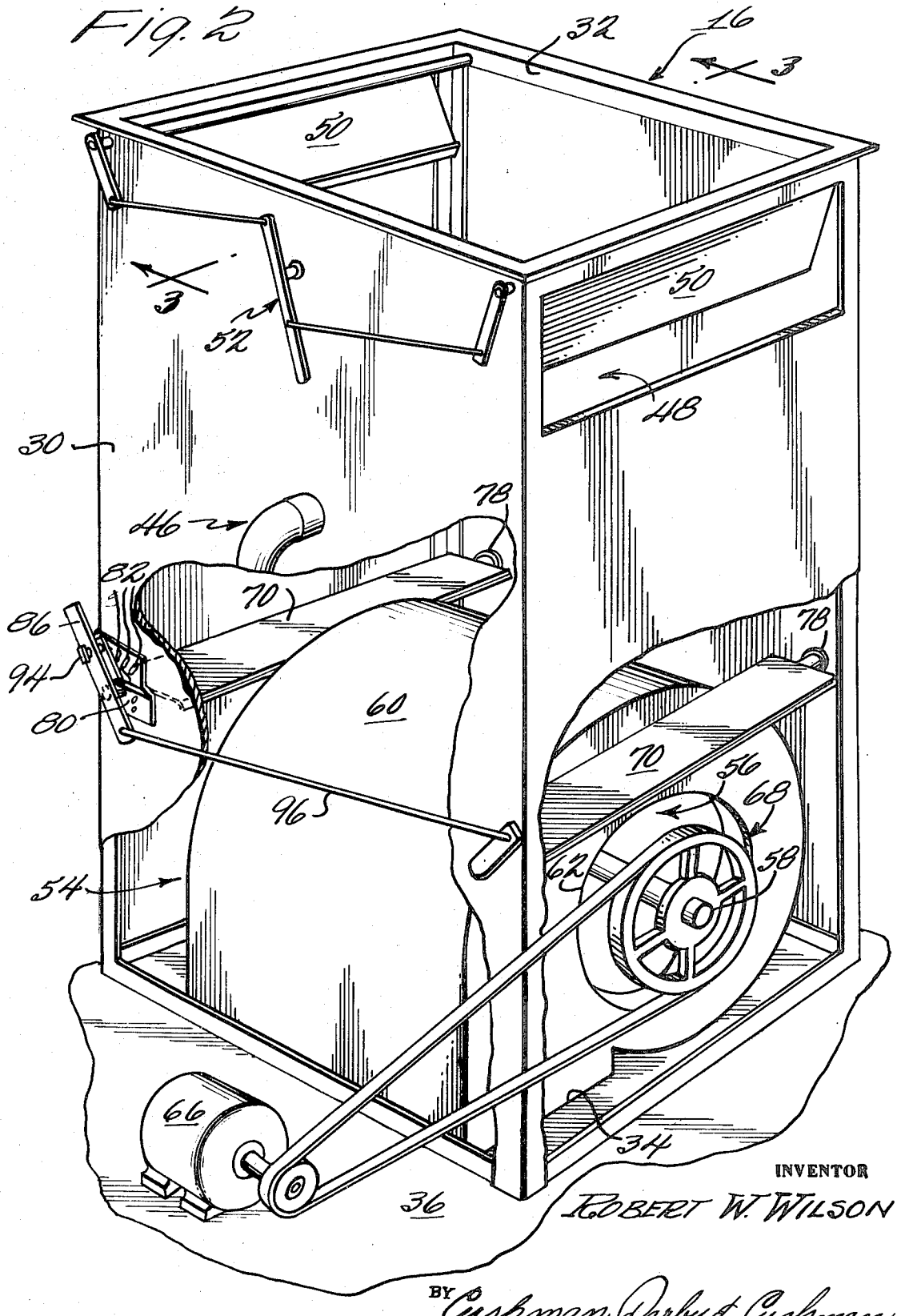
INVENTOR
ROBERT W. WILSON

BY Cushman, Darby & Cushman
ATTORNEYS

Patented May 23, 1972 3,664,034

3 Sheets-Sheet 2

Fig. 2



INVENTOR
ROBERT W. WILSON

BY Cushman, Darby & Cushman
ATTORNEYS

Patented May 23, 1972 3,664,034

3 Sheets-Sheet 3

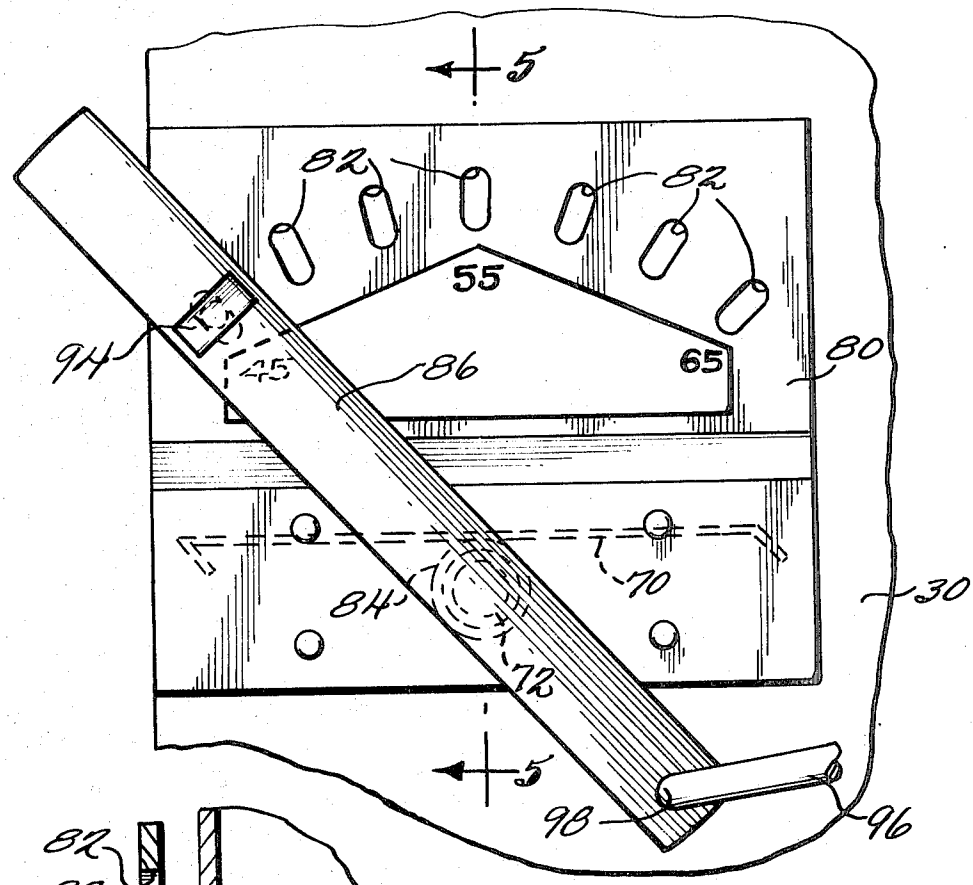


Fig. 4

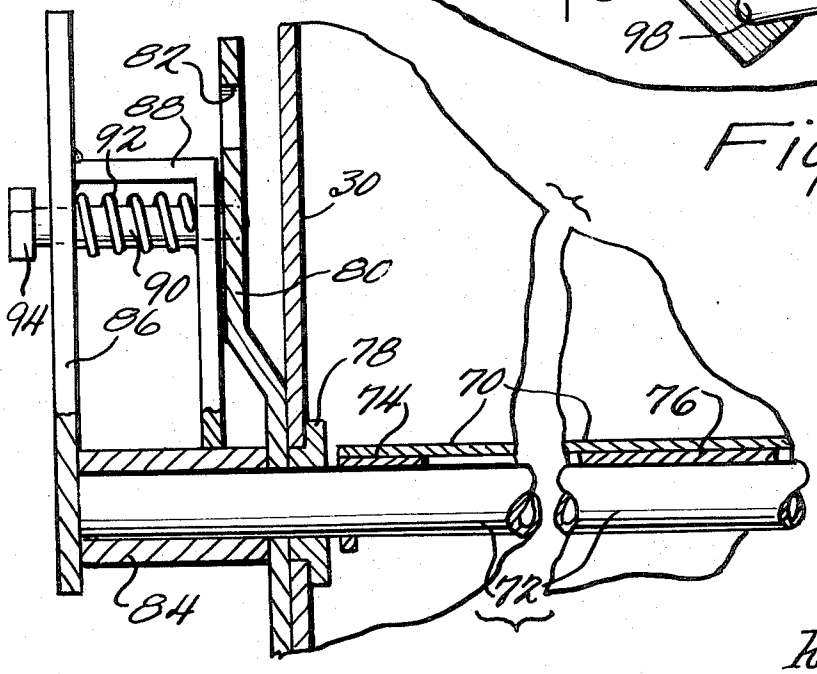


Fig. 5

INVENTOR
ROBERT W. WILSON

BY Cushman, Darby & Cushman
ATTORNEYS

TOBACCO BULK CURING SYSTEM WITH IMPROVED CURING AIR FLOW RATE CONTROL

This invention relates to the curing of tobacco and more particularly to the bulk curing of flue-cured tobacco.

The type of tobacco known as bright leaf or Virginia tobacco is cured in curing barns by means of heated air in a period of time of about 6 days. This type of tobacco is also known in the trade as flue-cured tobacco and is distinguished from other types of tobacco cured by essentially different processes as, for example, fire-cured and air-cured tobacco.

The procedures utilized in flue-curing before the introduction of bulk curing in 1960 (see Hassler U.S. Pat. no. 3,110,326, dated Nov. 12, 1963) are now referred to as conventional curing. These procedures usually involved the initial stringing of the tobacco leaves on sticks in small groups, sometimes referred to as hands. The strung tobacco sticks are individually supported on tier poles within the barn. With this conventional procedure, heaters are mounted in the bottom of the barn to heat the air and establish a chimney effect flow upwardly past the leaves and out the top of the barn.

The advent of bulk curing greatly reduced the amount of labor required in handling the tobacco leaves during the curing operation by eliminating the stringing procedures. Instead of stringing the tobacco on sticks, the leaves are loaded in mass within bulk curing racks which hold the tobacco in a generally compacted bulk mass with the flat surfaces of the leaves extending generally in a vertical direction. Bulk curing required the provision of a fan or blower operable to effect a forced flow of curing air through the leaves supported within the bulk curing racks.

In my earlier U.S. Pat. No. 3,134,583, dated May 26, 1964, there is disclosed a dual blower system for separately yellowing and drying tobacco in bulk. However, commercial bulk curing systems which have been used since the advent of bulk curing have all utilized a blower or fan operable to establish an essentially constant curing air flow rate through the tobacco during the entire curing process.

It has been found that the utilization of a constant flow rate results in certain disadvantages in the curing operation. If the rate of flow of the curing air is established at a relatively high value, the time required to accomplish the drying steps can be minimized, but all too often the quality of the cure is detrimentally affected because of premature drying during the yellowing stage. Premature drying prevents the tobacco from reaching its most desirable yellow color and prematurely stops the chemical reactions within the leaves before all of the desirable reactions have taken place. Moreover, leaf fluttering may occur at relatively high flow rates, resulting in bruising of the leaf and hence detrimentally affecting the quality of the cured leaf. On the other hand, where the flow rate is maintained constant at a relatively low value to insure proper yellowing, the drying stages are unduly prolonged, thus diminishing the overall efficiency of the equipment.

Accordingly, it is an object of the present invention to provide a bulk curing system of the type described having improved means for establishing a relatively low flow rate of the curing air for accomplishing the yellow stage of the curing process and a relatively high flow rate for accomplishing the leaf and stem drying stages of the curing process.

Another object of the present invention is the provision of a flow rate throttling means of the type described in a bulk curing apparatus which is simple in construction and operation and economical to manufacture and maintain.

These and other objects of the present invention will become more apparent during the course of the following detailed description and appended claims.

The invention may best be understood with reference to the accompanying drawings wherein an illustrative embodiment is shown.

In the drawings:

FIG. 1 is a perspective view of a tobacco curing apparatus embodying the principles of the present invention;

FIG. 2 is a fragmentary perspective view of the air conditioning and circulating assembly of the present invention with parts broken away for purposes of clearer illustration;

FIG. 3 is a fragmentary sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is an enlarged fragmentary front elevational view of the curing air flow rate throttling means; and

FIG. 5 is a fragmentary sectional view taken along the line 5—5 of FIG. 4.

Referring now more particularly to FIG. 1 of the drawings, there is shown therein a tobacco curing apparatus, generally indicated at **10**, embodying the principles of the present invention. In general, the apparatus **10** includes a curing barn structure, generally indicated at **12**, constructed in accordance with the teachings of Hassler U.S. Pat. No. 3,110,326, the disclosure of which is hereby incorporated by reference into this specification; and in accordance with the teachings of the aforesaid Wilson patent, the disclosure of which is hereby incorporated by reference into the present specification.

The curing barn structure **12** is adapted to receive and support a plurality of bulk curing racks, generally indicated at **14**, constructed in accordance with the teachings of my aforesaid patent and in accordance with my later U.S. Pat. No. 3,244,445, dated Apr. 5, 1966, the disclosure of which together with my earlier patent is hereby incorporated by reference into the present specification. As stated in the aforesaid Wilson and Hassler patents, each of the bulk curing racks **14** is operable to support a multiplicity of tobacco leaves within the barn structure **12** for curing by the passage of curing air vertically therethrough.

As best shown in FIGS. **2** and **3**, the apparatus **10** includes a curing air conditioning and circulating assembly, generally indicated at **16**, constructed in accordance with the principles of the present invention. In general, the assembly **16** is operable to establish a forced flow of heated air upwardly through the leaves carried by the bulk curing racks within the curing barn **12** to effect cure of the leaves.

The principles of the present invention can be adequately understood without a description of the details of the curing barn structure **12**. Reference may be had to the aforesaid Hassler U.S. Pat. No. 3,110,326, and Wilson U.S. Pat. No. 3,134,583, for these details. For present purposes, it is important merely to note that the curing barn structure provides one or more curing compartments **20**, there being three such compartments provided in the barn structure shown in FIG. **1**. The three curing compartments **20** are disposed in side-by-side relation with the outermost compartments extending the full depth of the barn structure and the central compartment being of lesser length so as to provide an area, generally indicated at **22** in FIG. **3**, disposed rearwardly of the central compartment and between the rear end portions of the outer compartments within which the curing air conditioning and circulating assembly **16** is mounted.

Each of the curing compartments **20** is provided with rack supporting rails **24** which, as best shown in FIG. **3**, are disposed three vertically spaced, horizontally aligned pairs on opposite sides of each compartment. The curing compartments define a tobacco loading and curing space through which the curing air passes vertically upwardly. It will be understood that while a vertically upwardly flow is preferred, a vertically downward flow may be utilized if desired.

Each horizontally aligned pair of rails **24** slidably receives and supports a plurality of bulk curing racks **14**. Here again, the details of construction of the bulk curing racks **14** need not be described in order to understand the principles of the present invention. References may be had to the disclosures contained in the aforesaid Wilson patents for these details. For present purposes, it is sufficient to indicate that each rack includes a pair of complementary rack sections **26** separable to permit the loading of a multiplicity of tobacco leaves therebetween, and movable together to retain the loaded leaves therein. Each rack also includes a plurality of elongated spikes or prongs **28** which serves to pierce the tobacco leaves

when the rack sections are moved together and to provide for interior support of the multiplicity of leaves secured within the rack during curing. The rack sections provide for peripheral support of the multiplicity of leaves when the rack sections are secured together, such peripheral support retaining the leaves together in an initially compressed condition in the manner described in the aforesaid Hassler patent.

The racks are of a size complementary to the curing chambers **20** so that when a plurality of such racks is supported on the rails **24** within each curing compartment **20** the leaves to be cured are supported for curing in three vertically spaced compact beds of leaves which uniformly fill the curing compartment in such a way as to insure that the curing air will pass through the leaves of the beds in series.

The present invention is more particularly concerned with improvements in the curing air conditioning and circulating assembly **16**, operable to provide effective control of the rate of air flow through the tobacco supported by the racks **14** within the compartments **20** of the apparatus **10** during the curing process. The assembly **16** comprises certain known components including a vertically extending main housing **30** of conventional skeletonized frame and sheet metal construction mounted within the area **22** and forming a part of an endless circulatory curing air flow path which, for convenience, can be described as commencing with an inlet opening **32** defined by the upper end of the housing **30** and extends therefrom in the direction of flow downwardly through the housing **30** to a discharge or outlet opening **34** formed in an imperforate floor structure **36** defining the lower surface of the area **22**. From the discharge opening **34** the air flows into an inlet space **38** which communicates with the curing compartments through perforated floor structures, generally indicated at **40**. If desired, vanes (not shown) may be provided within the space **38** adjacent the outlet opening **34** for the purpose of insuring an even distribution of the air to the floor structure associated with each compartment.

Each floor structure **40** is preferably of perforated metal construction, such as expanded metal or the like, in accordance with conventional practice, which renders the apparatus suitable for drying other crops, although it will be understood that other floor structures may be provided if desired, as for example, spaced wooden slats or the like. Moreover, it will be understood that the apparatus **10** will operate to cure tobacco without the provision of a floor structure **40**. The floor is a definite convenience during loading and unloading and renders the apparatus capable of being conveniently used for drying other crops.

The floor structures define the lower surface of the tobacco loading compartments through which the curing air flows vertically upwardly. The upper end of the curing compartments freely communicate with an upper return air space **42** defined along its upper surface by the roof of the barn structure. The endless curing air flow path is completed by communicating the upper space **42** with the upper inlet opening **32** of the housing **30** as by a roof structure **44** which defines the upper surface of the area **22**.

The temperature of the curing air is controlled by means of a burner unit, generally indicated at **46**. The burner unit as shown is gas fired, and may be of any conventional construction, either oil or gas fired. As shown, the burner unit communicates directly with the interior of the housing so that the products of combustion pass into the curing air. Such an arrangement is preferable with a gas fired burner unit. On the other hand, it is preferable where an oil fired burner unit is employed to discharge the products of combustion through a separate chimney or stack and to heat the air through a suitable heat exchanger, all in accordance with conventional practice. It will be understood that the burner unit is preferably provided with suitable controls (not shown) such as a thermostat or the like for effecting operation thereof in accordance with conventional practice.

In order to control the relative humidity of the curing air, the housing **30** is formed with fresh air inlet means **48** which, as shown, is in the form of two rectangular openings, one on each side of the housing adjacent the upper end thereof. The amount of fresh air introduced into the flow path is controlled by a damper member **50** movably mounted within each fresh air inlet opening **48**, the two dampers being interconnected for movement together by a lever and connecting rod assembly **51** of generally conventional construction. When the damper members **50** are adjusted to permit the introduction of fresh air through the inlet openings **48** additional air is supplied to the system and, for the purpose of permitting the discharge of a generally corresponding amount of air from the circulatory path, there is provided a pair of louvre units **52** which forms a part of the overall damper means for controlling the introduction and exhaust of air into and out of the circulatory path of flow.

As best shown in FIG. **1**, the louver units **52** are mounted in the front wall of the barn structure in communication with the upper portion of the barn. The units are of the type adapted to open outwardly in response to a predetermined air pressure in the upper portion of the barn structure. Thus, the louver units **52** will remain closed when the fresh air inlets are closed so that the entire system is effectively closed and the curing air will merely recirculate in the circulatory path. When fresh air is allowed to be introduced through the inlet openings **48**, the pressure will build up in the upper portion of the barn structure resulting in the exhaust of air in the circulatory path of flow outwardly to the atmosphere through the louver units **52**. The louver units thus serve to permit a discharge of air from the circulatory path commensurate with the amount of fresh air introduced to the circulatory path.

While the damper means described above is preferred, it will be understood that the essential characteristic for the control of relative humidity is to have a fresh air inlet opening and an outlet opening for the discharge of circulating air and a controllable damper unit associate with at least one of the openings. For example, louver unit **52** could simply be eliminated leaving the discharge outlet open or louver unit **52** could be controlled in lieu of damper means **50** and the latter could be either eliminated or replaced with a unit, such as louver unit **52**.

It will be understood that the fresh air inlet damper means as well as the thermostat controls of the burner unit may be automatically operated as, for example, by the control mechanism disclosed in my U.S. Pat. No. 3,503,137, dated Mar. 31, 1970, as well as other types of automatic as well as semi-automatic control mechanisms known in the art.

The circulation of curing air within the flow path is provided by a rotatable fan or blower, generally indicated at **54**, mounted within the housing **30** with its suction side downstream from the fresh air inlet openings **48**. As shown, the fan or blower is of the squirrel cage type, having a rotor blade assembly **56** mounted on a horizontal shaft **58** suitably journaled within the housing **30** surrounded by a casing **60** providing axial inlet openings **62** spaced from the adjacent wall of the housing **30** and a generally tangential outlet **64** connected with the outlet opening **34** in the floor structure **36**. As best shown in FIG. **2**, one end of the shaft **58** extending outwardly of the housing **30** is connected with a driving motor **66**, as by a belt and pulley assembly **68**. In accordance with conventional practice, the motor **66** is preferably an electrical motor of suitable horsepower as, for example, 7½ horsepower, with an operating rpm of 1725, the belt and pulley assembly **68** being operable to reduce the output rpm of the electric motor to an exemplary 625 rpm of the blower rotor blade assembly **56**.

It will be understood that other types of blowers may be utilized, as for example, radial blade fans and the like. The preferred power driven blower exemplified above has a rated capacity capable of establishing a continuous operational flow through the discharge opening **64** of approximately 16,500 cfm at the end of the drying procedure. The rated capacity of the fan is determined at the end of the cure because the fan is operating more nearly at its maximum capacity at this time. It

will be understood that a relatively small change in cfm output will occur because of the changing resistance to flow offered by the leaves as they diminish in size during the cure due to loss of moisture.

The rated capacity of the fan is given only as an example and is related to the specific air flow requirements of the exemplary barn structure herein disclosed. In general, the air flow requirements can most conveniently be expressed in terms of a cubic feet per minute flow per square foot of effective curing area provided by the apparatus. The effective curing area of the apparatus is herein defined as the horizontal cross-sectional open area (i.e. between the rails **24**) of all compartments **20** less the cross-sectional area therein assumed by the rack section structure in one tier or the cross-sectional area within which the leaves of one tier are confined. The effective curing area is determined by the leaf confining area in one tier only for the reason that the same curing air passes through the leaves in each tier regardless of whether there are two, three or more. The effective curing area of the exemplary barn structure referred to above is approximately 257 square feet.

In accordance with the principles of the present invention, the rated capacity of the motor driven fan **54** is chosen at a value within an operative range of between 50 cfm and 120 cfm for each square foot of effective curing area. A preferred range is from 55 cfm to 75 cfm and the preferred example enumerated above is about 65 cfm per square foot of curing area.

In accordance with the principles of the present invention, the rated flow rate of the fan is utilized only during the later leaf drying and stem drying stages of the curing process. It has been found that the preferred operative range provides efficient drying within a minimum time period but that such rate of flow when utilized during the initial yellowing stage of the curing process will detrimentally affect the quality of the cure. Where a constant flow rate within this operative range is utilized throughout the curing process, it has been found that the time required to effect drying is reduced as the constant air flow rate utilized is increased within the range but the quality of the yellowing decreases. This decrease in the quality of the leaf yellowing is due to premature drying toward the end of the yellowing stage, which results in setting the color at a point before the full desired yellowing takes place and stopping the chemical reaction within the leaf before the desired extend of chemical reaction has been completed. Moreover, at the relatively higher constant rates of flow, leaf fluttering during the yellowing stage can occur, resulting in leaf bruising and hence a deteriorating effect on the quality of the cured leaf.

In accordance with the principles of the present invention, the curing air controlling and circulating assembly **16** is provided with means for throttling the rate of air flow established by the fan **54**. To this end, with the embodiment shown, there is provided a pair of movable damper members **70** mounted within the housing **30** in a position upstream from the fan casing inlet openings **62** and downstream from the fresh air inlet openings **48**. As best shown in FIGS. **4** and **5**, each damper member **70** is formed from a rectangular piece of sheet metal having its longitudinal edges bent in parallel directions. Each damper member is fixedly secured to a shaft **72**, preferably in the form of a hollow tubular member, as by a pair of angular end brackets **74** and a central plate **76** suitably welded to the damper member **70** and the tubular shaft. The ends of each shaft **72** are suitably journaled within appropriate bearings **78** carried by the adjacent frame and walls of the housing **30**, the shaft end at the front wall adjacent the left side of the housing extending outwardly through an opening formed in a dial plate **80** fixed to the outer surface of the adjacent wall of the housing.

As best shown in FIG. **4**, the dial plate **80** includes a plurality of openings **82** which, as shown, are seven in number, equally spaced arcuately about the axis of the shaft **72**. A sleeve **84** is detachably rigidly secured to the protruding end of the shaft and has an actuating lever **86** fixedly secured thereto and extending radially outwardly from the outer end thereof. An L-shaped strap member **88** is rigidly connected, as by welding or the like, between an outer end portion of the lever and the inner end portion of the sleeve **84**. The lever and strap are formed with registering openings for receiving a latch pin **90**, the inner end of which is adapted to selectively engage within one of the openings **82** in the dial plate **80**. The latch pin **90** is spring urged in a direction to engage within the openings as by a coil spring **92** disposed in surrounding engagement with the pin with one end in engagement with the adjacent surface of the lever and the opposite end in engagement with a cotter key or the like extending through the pin. The outer end of the latch pin includes a handle portion **94** by which the operator effects manual movement of the pin outwardly of the openings **82**, against the action of the spring **92**, permitting manual movement of the lever **86** into any desired position of adjustment. Movement of the damper member **70** associated with the manual lever **86** is transmitted to the other damper member **70** by means of a connecting rod **96** pivoted at one end to the lever **86**, as indicated at **98** and at its other end to the outer end of an actuating arm **100**, the inner end of which is fixed to the associated shaft **72**.

It will be noted that when the actuating lever **86** is moved between its limiting positions defined by the outermost openings **82**, the damper members **70** will be moved from a horizontal to a vertical position within the housing. With the dampers in their vertical position, the flow rate of the fan **54** is substantially at its rated capacity. It will be noted however, that when the damper members **70** are disposed in their horizontal position, the area of the flow path to the fan casing inlet openings **62** is diminished, being restricted to the flow past the ends of the vertically disposed damper members **70** on opposite sides of the fan casing ends. In this way, the rate of air flow of the fan **54** is throttled down to an operative range of from 10 cfm to 50 cfm for each square foot of effective curing area. A preferred range is from 40 cfm to 45 cfm and in the exemplary embodiment described, an approximately 45 cfm rate of flow is established. The throttled down operative range of flow rates is utilized during the yellowing stage of the curing process, the flow rate utilized within the operative range being increased at least 10 percent during the subsequent drying stages in the curing process. Where the flow rate utilized is within the preferred range, the increased flow rate during the drying stages is at least 30 percent and in the specific example the increase is from 45 cfm to 65 cfm or approximately 45 percent. It will be understood that while the throttling damper members **70** are shown as being preferably positioned on the suction side of the fan, it is within the contemplation of the present invention to position the throttling damper members on the pressure side of the fan means as well.

From the above it is evident that in the normal operation of the present apparatus, the operator should adjust the actuating lever **86** at the start of the yellowing stage of the curing process so that the damper members **70** are disposed in their horizontal position. The curing can then proceed through the yellowing stage utilizing temperature and relative humidities such as disclosed in my U.S. Pat. No. 3,503,137. At the end of the yellowing stage, the operator then moves the actuating lever **86** so that the damper members **70** are disposed in their vertical positions and the leaf drying, stem drying and ordering procedures are then carried out utilizing temperatures and relative humidities such as disclosed in my U.S. Pat. No. 3,503,137. It will be understood that where an automatic control mechanism, such as disclosed in my U.S. Pat. No 3,503,137 is utilized, the air flow throttling damper members **70** may be connected with an actuating solenoid which is interconnected within the control circuit so as to be actuated or deactuated at the appropriate time during the curing cycle (i.e. at the end of the yellowing stage).

It will also be understood that with the seven positions of adjustment provided by the adjusting mechanism shown, the operator may utilize flow rates both for yellowing and drying which are intermediate the minimum and maximum flow

rates. These seven positions designate flow rates from 45 to 65 cfm in the illustrative embodiment shown at increments of 3⅓ cfm. This range of adjustability is particularly advantageous when the apparatus is utilized, without the bulk curing racks 14, to dry other crops, such as grain, corn, peanuts and the like. The adjustment provided affords the operator a simple means by which the most desirable drying flow rate for each crop can be utilized.

It thus will be seen that the objects of this invention have been fully and effectively accomplished. It will be realized, however, that the foregoing specific embodiment has been shown and described only for the purpose of illustrating the principles of this invention and is subject to extensive change without departure from such principles.

I CLAIM:

1. An apparatus for bulk curing tobacco comprising a plurality of bulk curing racks, each of said racks including means for receiving and supporting a multiplicity of tobacco leaves in initially compressed bulk form, a barn structure comprising means defining a curing air inlet space, a return air space and a vertically confined tobacco loading and curing space therebetween, means within said loading and curing space for receiving and supporting a plurality of bulk curing racks therein in a position with respect to the leaves supported thereby so that the flat surfaces thereof extend generally vertically and with respect to each other so as to form vertically spaced tiers of leaves horizontally filling said loading and curing space throughout an effective horizontal curing area, housing means within said barn structure defining a circulatory curing air flow path extending from said housing means to said air inlet space vertically therefrom through said tobacco loading and curing space and then through said return air space back to said housing means, said housing means having an inlet opening communicating with said return air space, fresh air inlet opening means communicating with said circulatory path adjacent said inlet opening, damper means mounted within said fresh air inlet opening means for movement into different positions controlling the amount of fresh air flowing inwardly into said circulatory path through said fresh air inlet opening means, air exhaust means communicating said circulatory path with the atmosphere for discharging a quantity of curing air from the flow path generally equal to the amount of fresh air flowing through said fresh air opening means in accordance with the position of movement of said damper means, heating means within said housing means downstream from said fresh air inlet opening means for controllably heating the air in said circulatory path, blower means within said housing means downstream from said fresh air inlet opening means rotatable to establish a flow of air in said circulatory path, constant speed motor means operatively connected with said blower means for continuously rotating the same, and air flow throttling means mounted within said housing downstream of said fresh air inlet opening means for movement into (1) a flow restricting position wherein said blower means is operable to establish a flow of curing air within said circulatory path at a rate of between 10 to 50 cfm per square foot of said effective horizontal curing area for curing the tobacco supported in said loading and curing space through an initial yellowing stage without premature drying or bruising and (2) a substantially unrestricted flow position wherein said blower means is operable to establish a flow of curing air within said circulatory path at a rate of between 50 to 120 cfm per square foot of effective horizontal curing area with an increase of at least 10 percent of the flow rate during the initial yellowing stage for curing the tobacco within the loading and curing space through subsequent leaf drying and stem drying stages efficiently in terms of time.

2. Apparatus as defined in claim 1 wherein said throttling means comprises damper means mounted within said housing means between said fresh air inlet opening means and said blower means for movement into said flow restricting position and said substantially unrestricted flow position.

3. Apparatus as defined in claim 2 wherein said throttling means includes an actuating lever operatively connected with said damper means for effecting movement of the latter and releasable latching means for releasably maintaining said actuating lever in positions corresponding with the flow restricting position and unrestricted flow position respectively of said damper means.

4. Apparatus as defined in claim 3 wherein said adjustable throttling means further includes means cooperating with said releasable latching means for releasably retaining said damper means within a plurality of positions intermediate said flow restricting position and said substantially unrestricted flow position.

5. Apparatus as defined in claim 1 wherein said housing means comprises a vertically extending housing of generally rectangular horizontal cross-sectional configuration and wherein said blower means includes a squirrrel cage blower mounted within the lower end portion of said housing for rotational movement about a horizontally extending axis and a casing surrounding said rotor having axial inlet openings on opposite sides of said rotor and a tangentially extending outlet opening, said throttling means comprising a pair of pivotally mounted damper means mounted within opposite sides of said housing in generally horizontally extending parallel relation in a position between the inlet openings of said blower casing and the upper end of said blower casing.

* * * * *