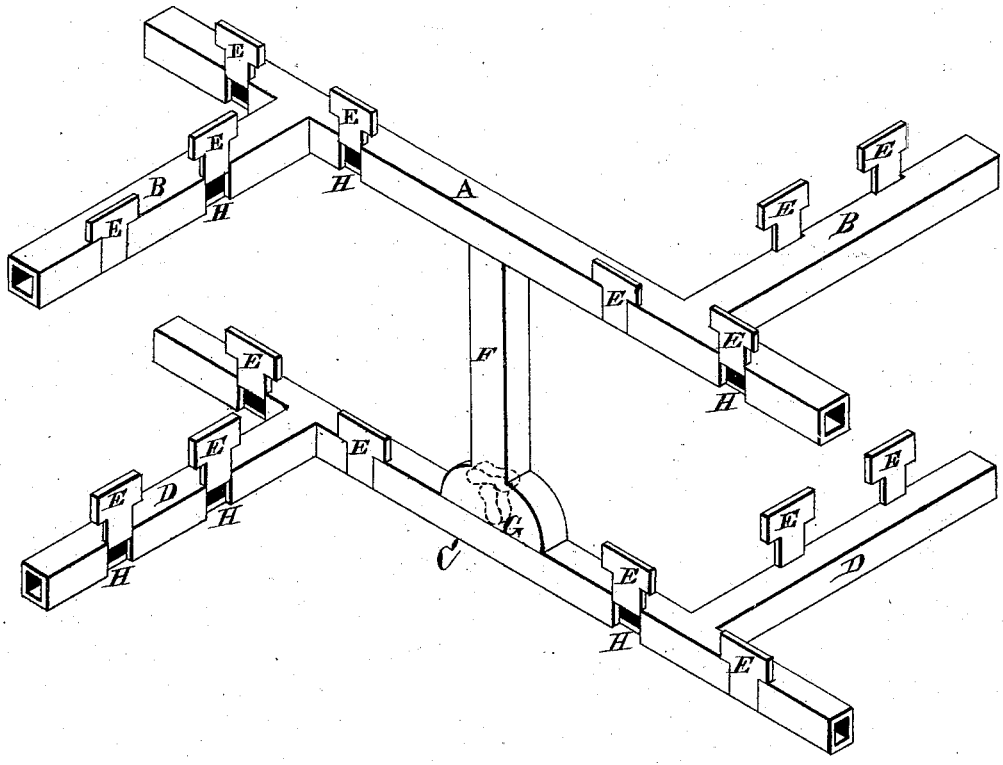
J. D. CULP.

THE ART OF CURING TOBACCO.

No. 169,777. Patented Nov. 9, 1875.



WITNESSES

Franck L. Ourand

E. L. Ewert

By

INVENTOR

James D. Culp

Alexander & Macrae, Attorneys

UNITED STATES PATENT OFFICE.

JAMES D. CULP, OF SAN FELIPE, CALIFORNIA.

IMPROVEMENT IN THE ART OF CURING TOBACCO.

Specification forming part of Letters Patent No. **169,777**, dated November 9, 1875; application filed October 20, 1875.

To all whom it may concern:

Be it known that I, JAMES DARIUS CULP, of San Felipe, in the county of Santa Clara and in the State of California, have invented certain new and useful Improvements in the Art of Curing Tobacco; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, making a part of this specification.

In the curing of green tobacco, it is usually hung up in rooms to dry. While the tobacco is in this position it usually happens that the atmosphere is much warmer in the upper part of the room than it is in the lower part, and as a consequence the tobacco most elevated dries much more rapidly than the tobacco that hangs at the lower elevations. Sometimes this difference in temperature is so great that the tobacco most elevated is injured by drying too rapidly, while at the same time the tobacco lowest down will spoil by remaining too long in a too moist condition.

My invention furnishes a remedy for these evils; and consists of a process and the means of operating it, by which the upper and lower portions of the atmosphere in tobacco-curing buildings are made to change places and mingle with each other to a sufficient extent to keep them at a nearly uniform temperature. It also consists in raising and lowering the temperature of the said atmosphere by driving hot or cold air from without into the building, as well as by driving out from the building any desired part of the air in it.

The hot or cold air driven into the building may be taken from the open air without, when it is in a proper condition to furnish the quality desired, or such or cold air may be taken from rooms, or reservoirs, or pipes artificially heated or cooled.

Where an engine is used to drive the blowers a pipe can be led into the fire and there heated, and then extended to the curing-room. The air passing through it is heated by the fire, which creates a draft in the pipe, and thus furnishes a supply of hot air to the curing-room.

My invention furnishes the means of increasing or retarding at will, and at any stage, the speed with which tobacco can be dried, and for this purpose is of very great importance.

Tobacco is manufactured into many sorts, as articles of trade—as, for instance, chewing-tobacco, fine-cut tobacco, cigars, snuff, &c. There are also many varieties of each of these several sorts.

Green tobacco-plants, when first cut, contain juice or moisture to the amount of about four fifths of their entire weight. When dried with ordinarily-moderate rapidity, they turn from green to yellow, and from yellow to brown, passing through a great variety of shades of each color.

Each one of the different sorts into which tobacco is manufactured, as mentioned, requires that the tobacco should be colored a particular hue when thoroughly dried.

The color of the tobacco furnishes a test of its quality when dried, and also of its condition while passing through the drying process. The color which the tobacco has attained at any stage to which it has advanced will be changed but little if the tobacco is then dried with great rapidity; but if dried very slowly the color will change in a much greater degree.

As with each change of its hue there is produced a change in the character of the tobacco being cured, and as the hues are controlled by the slowness or rapidity with which the tobacco is dried, a full control of the speed at which the tobacco dries furnishes an easy control of the process by which the operator is enabled to so cure the tobacco being dried as to make it of the proper kind and quality to be manufactured into any one of the various sorts mentioned which he may desire, and can also, to a very great degree, control the quality of each of these sorts.

To attain these desired results, I construct a system of pipes or tubes, a section of which is shown in the drawings.

In the drawing, A represents a section of a tube or pipe, which runs horizontally along the upper part of the building or buildings. B are branches of the same tube or pipe. C is another tube or pipe, running horizontally along the lower part of the same building or buildings. D are branches of C. E are slides, which open and close the orifices, H opening

into A and C and their branches B and D. F is a tube or pipe that opens into and connects A with C. Within the tube F is placed a blower, say at G, which is driven by any of the well-known methods of driving blowers.

The tubes or pipes are of ordinary construction, and can be made of wood or any other suitable material. Neither is there anything peculiar in the blower, and any ordinary kind of slide, gate-valve, or cock may be used which will open and close the orifices to a sufficient extent.

The capacity of the tubes or pipes, and the openings H, which are opened and closed by E, will depend upon their size, which will be varied according to the work they have to perform, and the capacity of the blower should be made to correspond with the pipes.

For buildings running one thousand feet in length, with wings numerous and large enough to make the buildings average two hundred feet wide, I use two sets of tubes, having the hollow space through them twelve inches square, with branches of the same kind, all having the openings at E ten inches one way by twelve inches the other way, and use in each set of tubes a blower capable of forcing through the tubes three thousand cubic feet of air per minute.

The extreme end of some of the tubes should be extended to the open air outside of the buildings, and have slides E, or their equivalents, to control their openings, so that communication can be opened or closed at pleasure between the inside of the tubes and the open air outside of the buildings.

The ends of some of the tubes or their branches may extend in the same way into adjoining buildings, in which the air is warmed or cooled by artificial means, and thus a supply of hot or cold air may be obtained whenever desired.

The operation is as follows: When it is desired to force the cooler air from the lower part of the building to the upper part, the blower is set in motion to force air upward. The slides E are left far enough open to allow the air to be freely drawn into the lower tubes and driven out of the upper ones. As the air from C and its branches is driven upward through F by the blower its place is constantly refilled by the adjacent air, which rushes into C and its branches through the orifices H. The lower air is thus drawn into the tubes and forced by the blower up through F into the upper tube A and out through its orifices H into the upper part of the building, and thus the lower and cooler air of the building is mingled with its upper and warmer air, and the temperature of the whole is equalized.

The tubes A and C, and also their branches B and D, can be continued to any desired length, and carried in any direction, and the number of the branches can be increased or diminished, and thus made to equalize the temperature in any building, or set of buildings, no matter how divided into rooms, or how extended in number or size, or how varied in shape.

In extensive buildings, such as I have mentioned, I construct a second set of tubes, branches, orifices, slides, and blower, in all respects precisely like the first, except that the blower is made to force the air downward instead of upward.

This second set works precisely like the set first described, except that it forces the air in the reverse direction, and thus forces the upper and warmer air into the lower and cooler part of the room.

By the use of the apparatus first described the air can be drawn from any place in the lower part of any building and driven to any place in the upper part of the same, or any other building; and at the same time, by a similar use of the second set of apparatus described, the air can be taken from any place in the upper part of any building and driven to any place in the lower part of the same, or any other building; and in a similar manner the air from the outside can be drawn into the buildings, and the air from the inside of the buidings forced out through the ends of the tubes and branches, which extend through the sides of the buildings to the open air outside.

By this apparatus, and a judicious use of the slides E, I am enabled to move the air in drying-houses from one place to any other place desired, and am also enabled to drive the air from any part of the drying-house out of doors entirely, and can also force from out of doors, as well as from an adjoining building containing hot or cold air, into any desired part of the drying-houses, and can thus equalize the temperature in the different parts of the drying-houses; and can also raise or lower the temperature at will in any one room or building, or any number of the entire buildings, and can thus hasten or retard the drying process in any locality in the buildings as may be most advantageous.

In a single drying-room the atmosphere may be equalized in a considerable degree, according to my invention, by the use of the upright tube F and the blower, without the rest of the apparatus.

I may also increase the heat of the drying-houses by placing upon their roofs iron plates, or other similar substances, that will attract the sun's rays.

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

1. The combination, in a tobacco-drying apparatus, of a hollow tube, arranged at or near the top of the drying-room, a hollow tube at or near the bottom thereof, a vertical hollow pipe connecting the upper and lower tubes, and a blower interposed between said upper and lower tubes, whereby the temperature of the room may be made uniform, substantially as set forth.

2. The combination of the upper tube A,

having orifices H and slides E′, the lower tube C, having similar orifices and slides, the vertical pipe F and interposed blower G, all substantially as set forth.

3. The branch pipes B D, having orifices and slides, in combination with the horizontal pipes A C, vertical pipe F, and blower G, all substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 31st day of August, 1875.

JAMES DARIUS CULP. [L. S.]

Witnesses:
M. A. WHEATON,
ED. J. SMITH.