U. T. BOWDON.

Improvement in Process and Apparatus for Treating and Curing Tobacco, Fruit, &c.

No. 130,695. Patented Aug. 20, 1872.

Fig. 1.

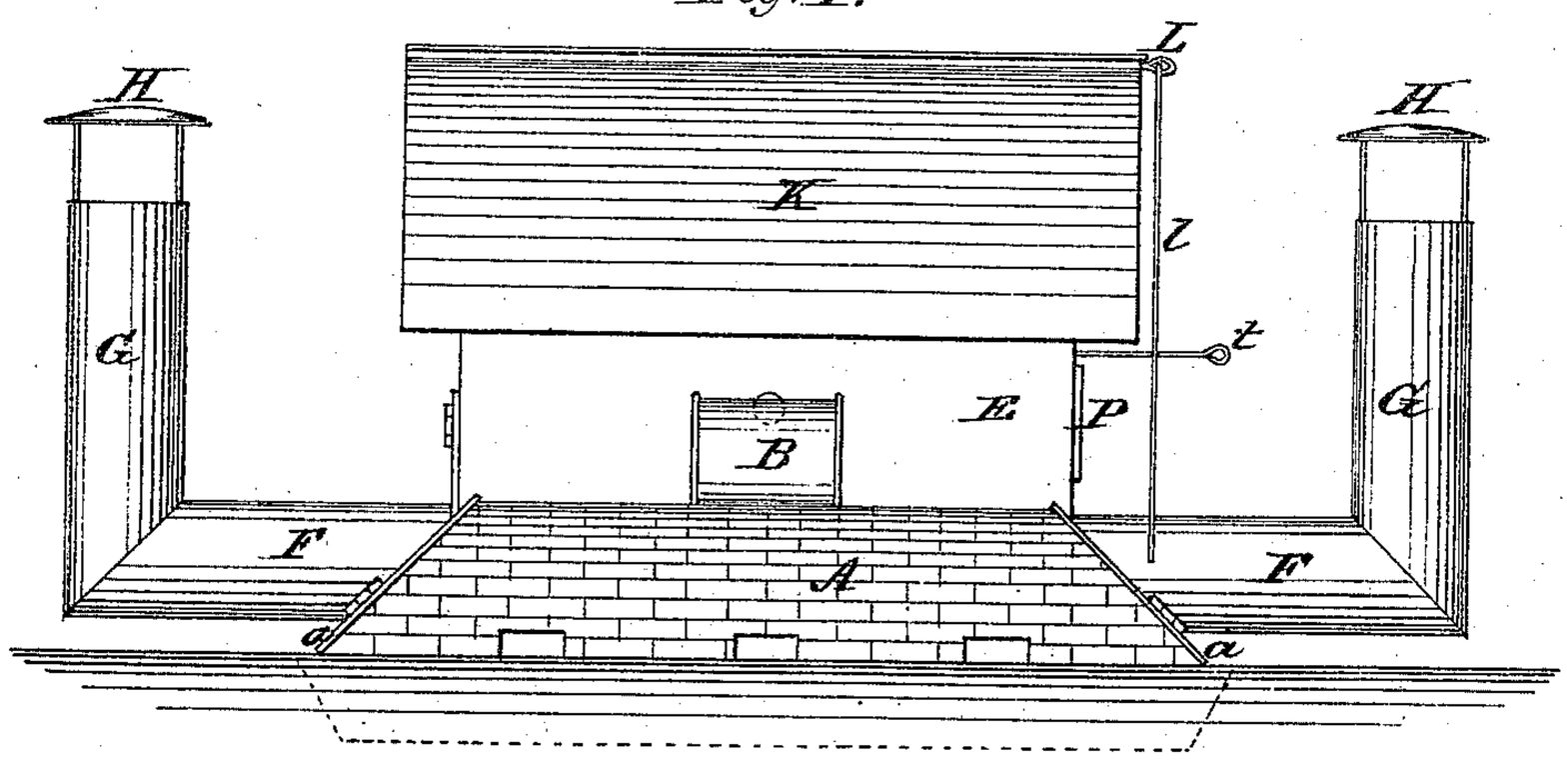


Fig. 2.

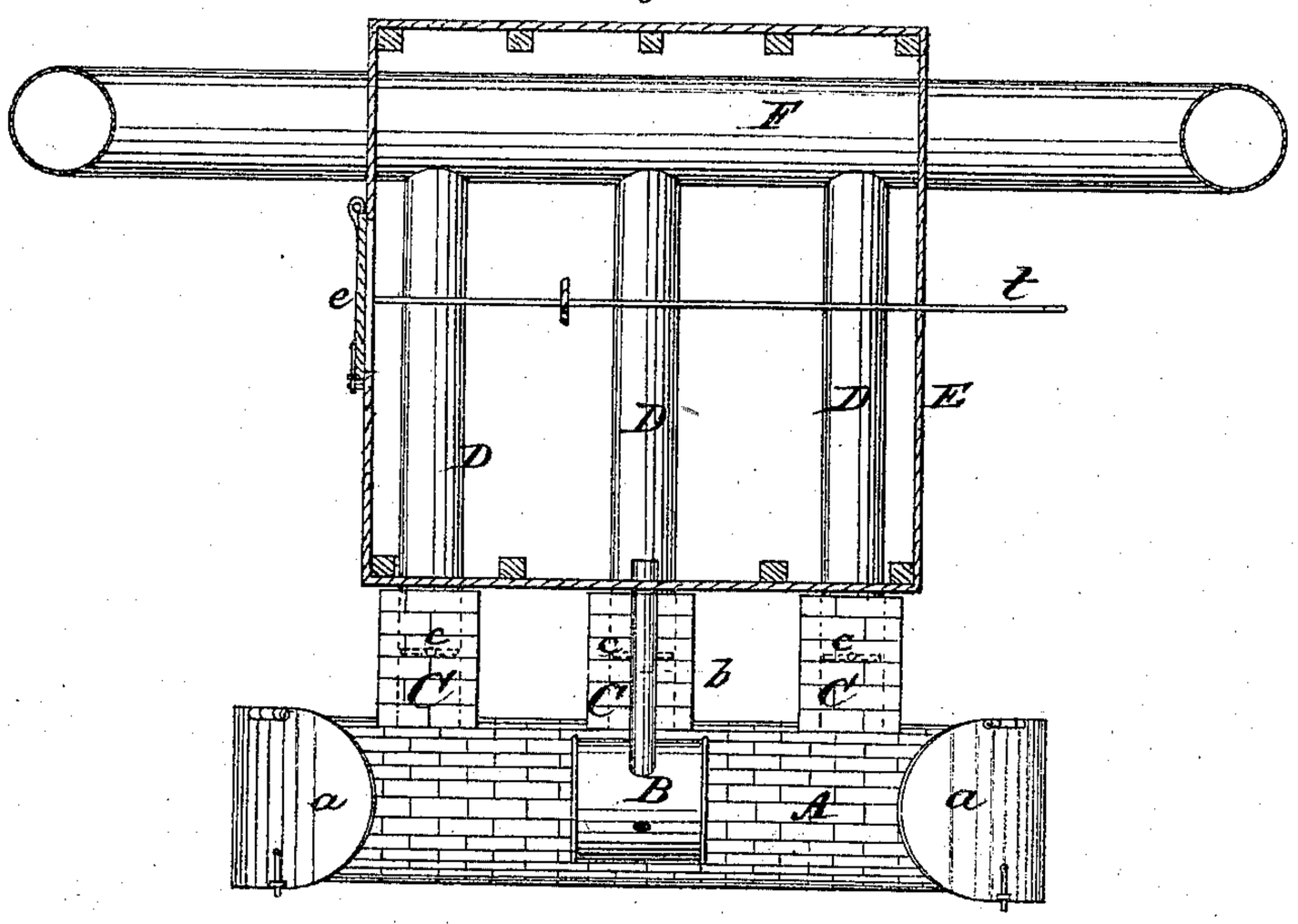
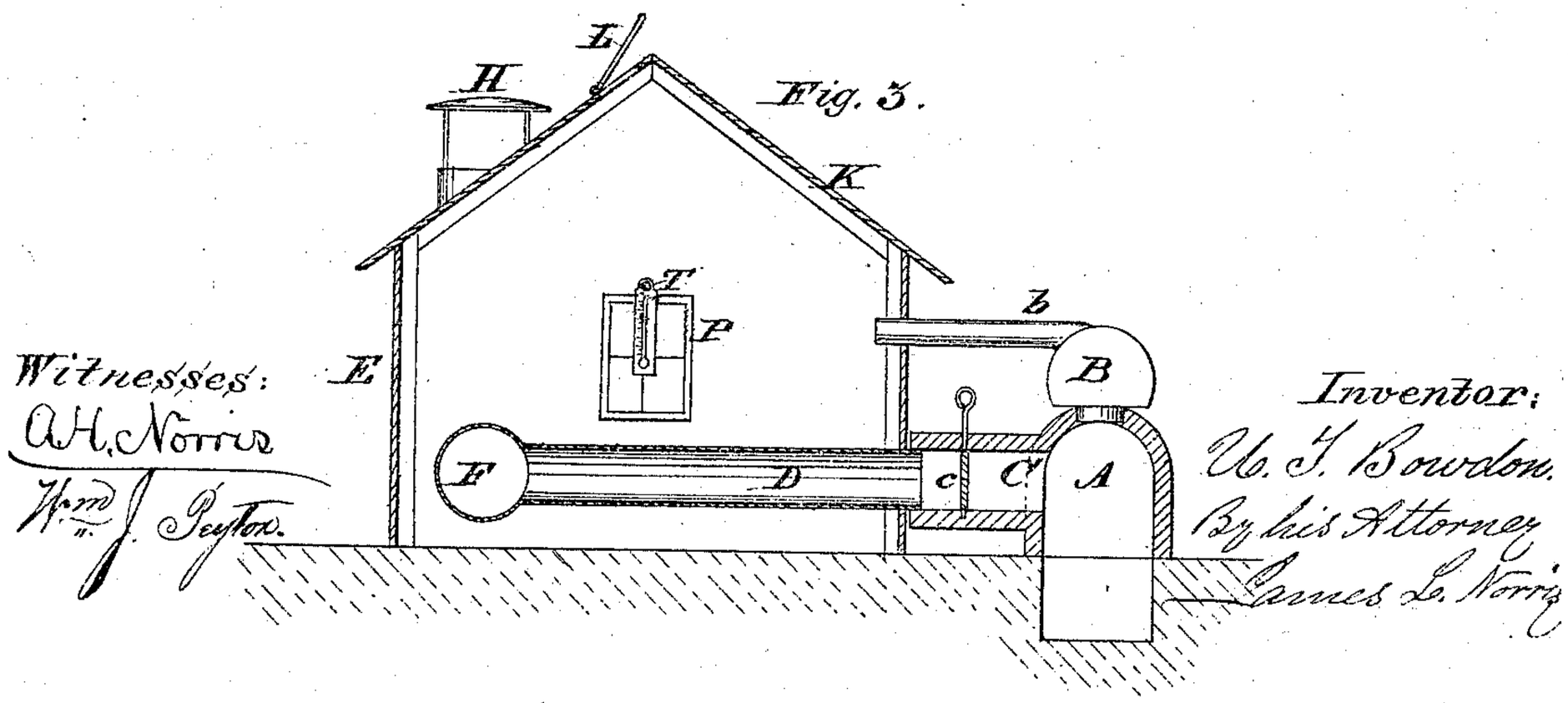


Fig. 3.



Witnesses:
A. H. Norris
Wm. J. Peyton.

Inventor:
U. T. Bowdon.
By his Attorney
James L. Norris

UNITED STATES PATENT OFFICE.

UPTON THOMAS BOWDON, OF OXFORD, NORTH CAROLINA.

IMPROVEMENT IN PROCESSES AND APPARATUS FOR TREATING AND CURING TOBACCO, FRUIT, &c.

Specification forming part of Letters Patent No. **130,695,** dated August 20, 1872.

SPECIFICATION.

Be it known that I, UPTON THOMAS BOWDON, of Oxford, in the county of Granville and State of North Carolina, have invented certain new and useful Improvements in Process and Apparatus for Treating Tobacco, Fruit, Grain, &c., of which the following is a specification:

This invention relates to the curing of the tobacco-plant, and to a process and apparatus for facilitating said curing process. The first part of the invention consists in gradually elevating the temperature of the compartment containing the tobacco to be cured from a minimum of 95° to 100° Fahrenheit to a maximum of 175° to 180° Fahrenheit during the several stages of the drying process; and, finally, before removing from the drying-chamber, subjecting the tobacco to a steaming process, so as to render it pliable for packing or storing, &c. The second part of the invention consists in the construction of a curing-house, provided with a series of flues parallel to each other and terminating in a transverse flue of greater diameter, said transverse flue projecting from the house on either side and terminating in an uptake, the uptake being surmounted by a cowl or shield; in providing a door in, or movable portion to, the roof of the chamber; a furnace exterior to the curing-chamber and communicating with the flues traversing said chamber; a boiler resting upon and heated by the furnace; a series of dampers for regulating the passage of the products of combustion into one, two, or more of the flues which traverse the curing-chamber; and in a thermometer suspended in said chamber, and a pane of glass or peep-hole in the wall of the chamber, all as herein more fully set forth.

In the drawing, Figure 1 is a front view, showing the furnace, curing-chamber, or house, projecting pipe, uptake, &c. Fig. 2 is a top view of the same, the curing-chamber being in horizontal section to show the position of the parallel and transverse flues. Fig. 3 is a vertical section of curing-chamber or house, flues, furnace, &c.

A is the furnace for heating the curing-chamber, which is constructed of brick or iron, and is somewhat longer than the side of the curing-chamber; it is provided with suitable draft-openings, and with a door, *a*, at either or both ends; the door being hinged at one side, and from the slant given to one end of the furnace, will remain closed of its own weight; but to insure its closure, in case of warping, it may be provided with a suitable fastening. From furnace A a series of flues, C, connect with the parallel pipes or flues D of the curing-chamber. The flues C may be built of brick, or may be of metal, and are provided with dampers *c* for controlling the passage of the products of combustion, so that all of the same may be caused to pass out at any one or more of the flues. D is a series of parallel flues traversing the curing-chamber or house. In the present instance I have shown only three, but as many may be used as the size of the building demands. Each additional flue, will, of course, demand an additional exterior flue and damper for communicating with furnace. The flues D traverse the curing-chamber along its bottom, and at the end opposite to the furnace connect with a transverse flue, F, which is of sufficient diameter to allow of the free passage of the products of combustion from a series of parallel flues, D, and projects from the two sides of the curing-chamber, terminating in a couple of stacks or uptakes, G. These uptakes need not be as tall as the curing-house, and are surmounted by disks H, which deflect any sparks that may pass through the flues from the furnace. Instead of the disks cowls may be used. E is the curing-chamber or house, which is constructed in any of the well-known ways. When from three to five heating-tubes are used, the house is about fifteen feet square, a larger chamber requiring a greater number of flues. The curing-chamber is provided with a window or peep-hole, P, upon one side, and within the chamber, and sliding upon a cross-beam or rod is a thermometer, T, which can be drawn forward to the window or peep-hole by means of a rod, *t*, attached to it, and extending to the outside of the chamber. K is the roof of the house, which is provided with a hinged or movable portion, L, that can be raised by a rod, *l*, or other suitable device, to allow of the escape of moisture whenever there appears a liability of tobacco sweating. B is a boiler, which is placed upon the furnace, and connects with the house E by means of a pipe,

b. This is used toward the close of the process to generate steam to be used in rendering the tobacco pliable. The flues C D F are made in sections, so that they can be disconnected when not in use, and packed away in a compact manner.

The dampers are, by preference, operated singly, but the series may be so connected as to be operated simultaneously, if desired, or in place of the dampers slides may be used to regulate the passage of the products of combustion.

The plant is cut at maturity, which is distinguished by the formation of a clammy exudation upon the leaf, and if the plant is very large the stalk is split down to facilitate the drying operation. It is conveyed to the curing-house and suspended by sticks in the usual manner. A fire of coal or wood, preferably wood, is made in the furnace, the dampers *c* opened, and the products of combustion allowed to escape through the parallel flues D and transverse flue F until the thermometer marks 95° or 100° Fahrenheit. The dampers are now manipulated so as to retain the curing-chamber at this temperature until the leaf of the tobacco presents a yellow appearance. I now increase the fire in the furnace, if requisite, or open the dampers, if that is all that is necessary, until the thermometer marks 110°, and closely watch the tobacco, examining it from time to time until it has assumed a toughened state. I now raise the temperature to about 115° Fahrenheit, so as to gradually dry the stems and thicker portions of the plant. I continue to raise the temperature little by little until about 125° or 130° is reached, when the thicker portions will have become dried; but to completely dry the stalk the heat is finally raised to 175° or 180° Fahrenheit. If, during this drying process the tobacco should "perspire," or have the appearance of being so, the heat is at once shut off and the ventilator L opened, to allow of the free escape of the moisture, for if not checked this perspiring would darken and injure the tobacco. If at any time during the heating one or more of the flues D becomes red or overheated, or another of the flues is not sufficiently heated, this can be corrected by closing one or more of the dampers *c*, and causing the products of combustion to be shut off from the flue that is overheated and pass through the flue or flues that are too cool. When the tobacco in the curing house is sufficiently cured the boiler B is placed upon the furnace A, and the tube *b* passed into the curing-chamber through a suitable opening. The steam generated in the boiler escapes into the curing-chamber, and passes among the dry tobacco, moistening it, so that it will be pliable and not liable to crack and break when handled and in packing or storing.

What I claim as my invention, is—

1. The detachable parallel and transverse flues, in combination with the curing-chamber, as and for the purpose specified.

2. The furnace, provided with its flues and dampers, in combination with a curing-chamber having a ventilator, L, and parallel and transverse flues, as and for the purpose set forth.

3. The furnace A and boiler B, in combination with the curing-chamber, substantially as described.

4. The thermometer J, suspended within the curing-chamber, in combination with the window or peep-hole P and heating-flues D, as set forth.

5. The process herein described for curing tobacco—viz., subjecting it to a gradually-increasing temperature of from 75° to 180° Fahrenheit until dried and then moistening it with steam, as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand.

U. T. BOWDON.

Witnesses:

JAMES L. NORRIS,

A. H. NORRIS.