2 Sheets—Sheet 1.

D. E. COLMAN.

FRUIT-DRIER.

No. 180,003. Patented July 18, 1876.

Fig. 1.

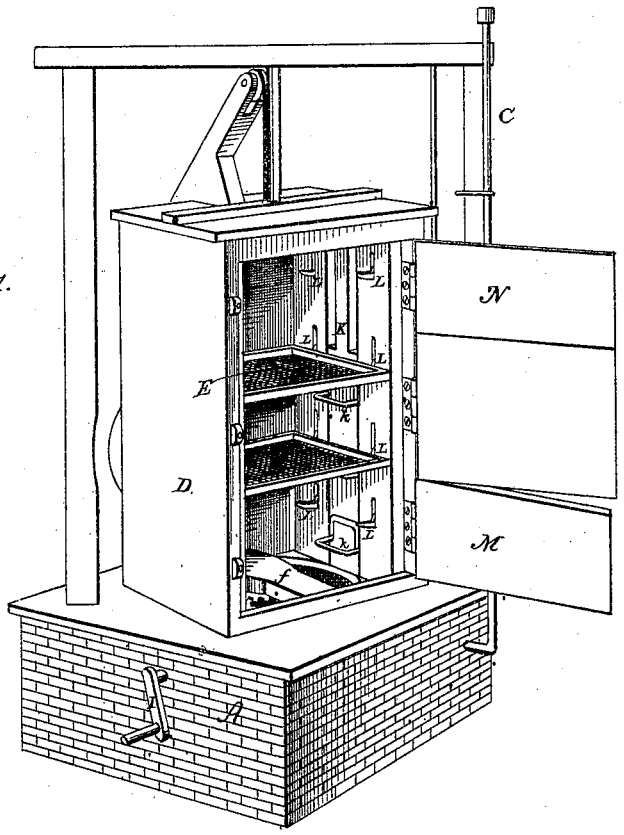
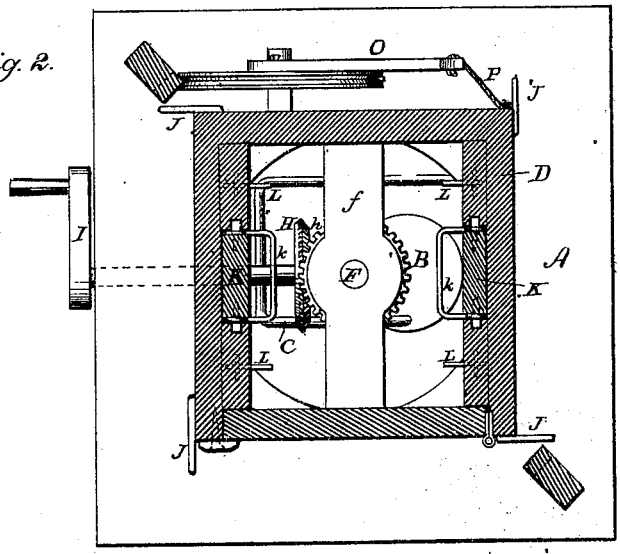


Fig. 2.



Attest:

Clarence Poole

Jno. D. Patten

Inventor:

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By his atty

R. D. Smith

2 Sheets—Sheet 2.

D. E. COLMAN.

FRUIT-DRIER.

No. 180,003. Patented July 18, 1876.

Fig. 5.

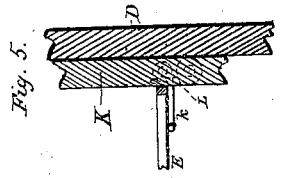


Fig. 4.

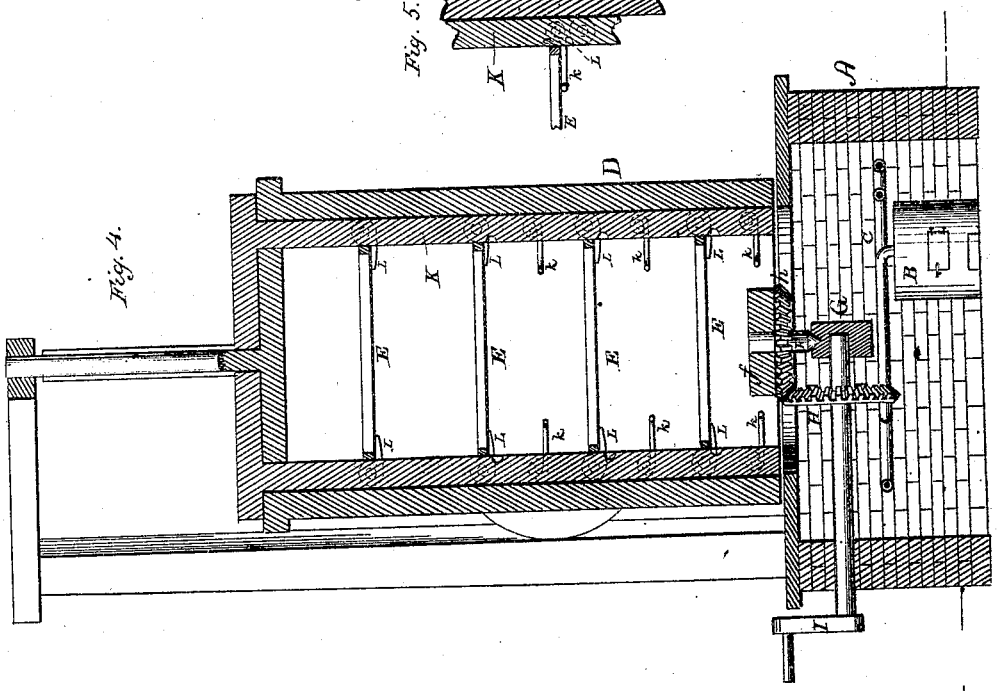
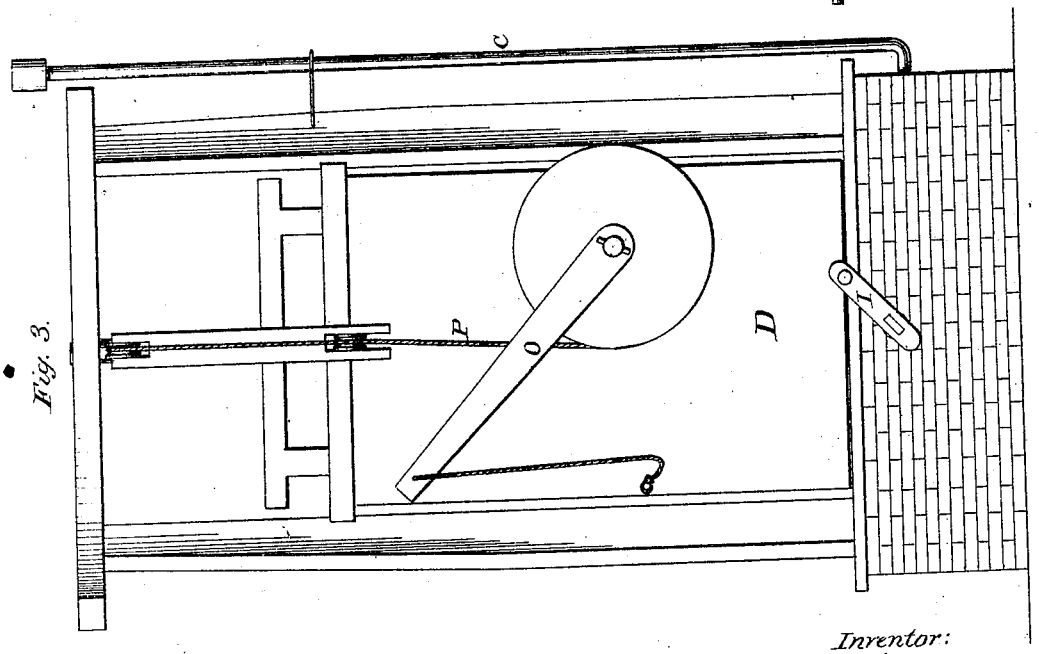


Fig. 3.



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UNITED STATES PATENT OFFICE.

DAVID E. COLMAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN FRUIT-DRIERS.

Specification forming part of Letters Patent No. **180,003**, dated July 18, 1876; application filed July 10, 1876.

To all whom it may concern:

Be it known that I, DAVID E. COLMAN, of Washington, in the District of Columbia, have invented new and useful Improvements in Dry Houses or Kilns adapted to the Drying or Curing of Fruits, &c.; and that the following is a full and exact description of the same.

This invention relates to that class of drying-kilns which are intended for and adapted to the curing of fruits, &c.; and it consists, first, in constructing the entire chamber to revolve above the heating apparatus, in contradistinction to a stationary chamber with revolving racks and trays, or revolving scrapers, to move the fruit or stationary shelves; second, in devices whereby the trays may be transferred in successive stages from the bottom to the top of the drying-chamber without opening the outer doors of said chamber or the escape of hot air.

It is well known that the best results in curing fruit are obtained when the fresh fruit is at first submitted to a pretty high degree of heat for a few minutes, and then, by successive stages, removed to a more remote portion of the drying-chamber, the degree of heat being thereby decreased as the curing progresses. To accomplish this gradual removal it has generally been necessary to open the heated chamber, and, by hand, transfer the trays from the lower to the higher positions in the chamber, at each opening the topmost tray being removed and a fresh one inserted at the bottom. I am aware, however, that screw and chain elevators have been devised to effect this transfer, and therefore do not claim more than the device which I have invented for that purpose.

That others may fully understand my invention, I will particularly describe it, having reference to the accompanying drawings, wherein—

Figure 1 is a perspective view of my invention. Fig. 2 is a transverse section of the same. Fig. 3 is a vertical section, and Fig. 4 is a rear elevation, of the same.

A is the base, which, in a machine for operation on a large scale, may be of brick. Within the base A is the heating apparatus, which consists of a furnace, B, of any suitable construction. C is the smoke-pipe, which I prefer to dispose in said base A in a horizontal helical coil above the heater B, and beneath the circular opening in the roof of the chamber A, through which the heated air ascends to the bottomless drying-chamber D, which stands immediately over said opening. The smoke-pipe C finally emerges from the base A, and is connected with some adjacent flue, or carried sufficiently high into the air to insure the requisite draft. It is practically very difficult to produce, at all points over the bottom tray, the same degree of heat, and therefore the trays have been made to revolve in some instances, and in others the substances have been agitated and moved about by stirrers, so as to produce a uniform result in curing. These plans involve more or less complication and additional expense.

I propose to construct my drying-chamber D with brackets for the reception of trays E, as though the whole was designed to be stationary, and then mount said chamber upon a pivot, F, or some equivalent device, which will permit the same to revolve freely about its axis immediately above the opening in the top of the heating-chamber A. Thereby the structure is materially cheapened and the exposure to heat is perfectly equalized. In the apparatus shown in the drawings the chamber A is provided with a pivot pin, F, set in a transverse bar, *f*, and resting in a step formed in a transverse bar, G, set firmly in the base A, as shown in Fig. 4. The revolution of the drying-chamber is produced by gearing H *h* and crank I. Any other equivalent means, however, may be employed, such as pulleys and belts, or simple handles like J, which the attendant may grasp.

If desirable, the revolution of the chamber D may be caused to operate a propeller-fan located in the top of the heating-chamber A and beneath the open bottom of the drying-chamber, to slightly impel the hot air upward into said chamber.

The device for elevating the trays consists of a sliding frame or sash, K, the two opposite side bars of which slide in grooves in the sides of the chamber D, while the top cross-bar of the same is outside of and above the top of said chamber, so that any convenient power may be employed to slide said sash up and

down without opening the chamber or permitting the escape of hot air or the entrance of cold air. The side bars K K are furnished with a series of self-adjusting hinged or folding brackets, *k*, which are free to fold upward against the front of said side bar, or into notches cut therein; but, when not so folded, said brackets project horizontally, and rest upon shoulders or ledges formed in said side bars for that purpose. On each side of the bars K are similar self-adjusting brackets, L L, hinged to the inner sides of the chamber D, and similarly able to fold upward into recesses, but resting upon stop-shoulders as they fall down again, so that they project horizontally from the side of the chamber. The trays E rest upon the brackets L, and are lifted or transferred from one set of brackets L to the set next above by the sliding sash K and its bracket *k*. This operation is simple, and will be understood at a glance. The sash K descends, and as the brackets *k* pass the edges of the trays E they fold upward, and again fall outward when the tray is passed, so that when said sash moves upward again the trays are caught by the brackets *k*, and lifted past the set of brackets L next above, which similarly fold upward to let the tray pass, and fall outward again when it has passed. After each lift, which should occur once in every seven or eight minutes, a small door, M, at the bottom of the chamber D, is opened, and a tray of fresh fruit is placed upon the brackets at the bottom of said chamber, and a similar door, N, at the top is opened, and a tray of finished dried fruit is removed.

The doors M and N are only high enough to permit the passage of the trays.

The power to raise the sash K and the inclosed trays may be such as is convenient. In the drawings I show a lever, O, pivoted to the back of the chamber D, and connected by a cord, P, passing over guide-pulleys attached to the top of the sash-frame K. A single movement of said lever produced by the hand of the operator is sufficient to elevate all the trays one stage. The sash descends again by its own weight.

Having described my invention, what I claim as new is—

1. A dry house or chamber, D, mounted to revolve over a heating-chamber, A, substantially for the purpose set forth.

2. A dry house or chamber, D, provided with self-adjusting brackets L, substantially as described, combined with a sliding sash, K, provided with similar self-adjusting brackets *k*, for the purpose of elevating all the inclosed trays E one stage by a single movement, as set forth.

DAVID E. COLMAN.

Witnesses:
R. D. O. SMITH,
N. B. SMITH.