

No. 690,834.

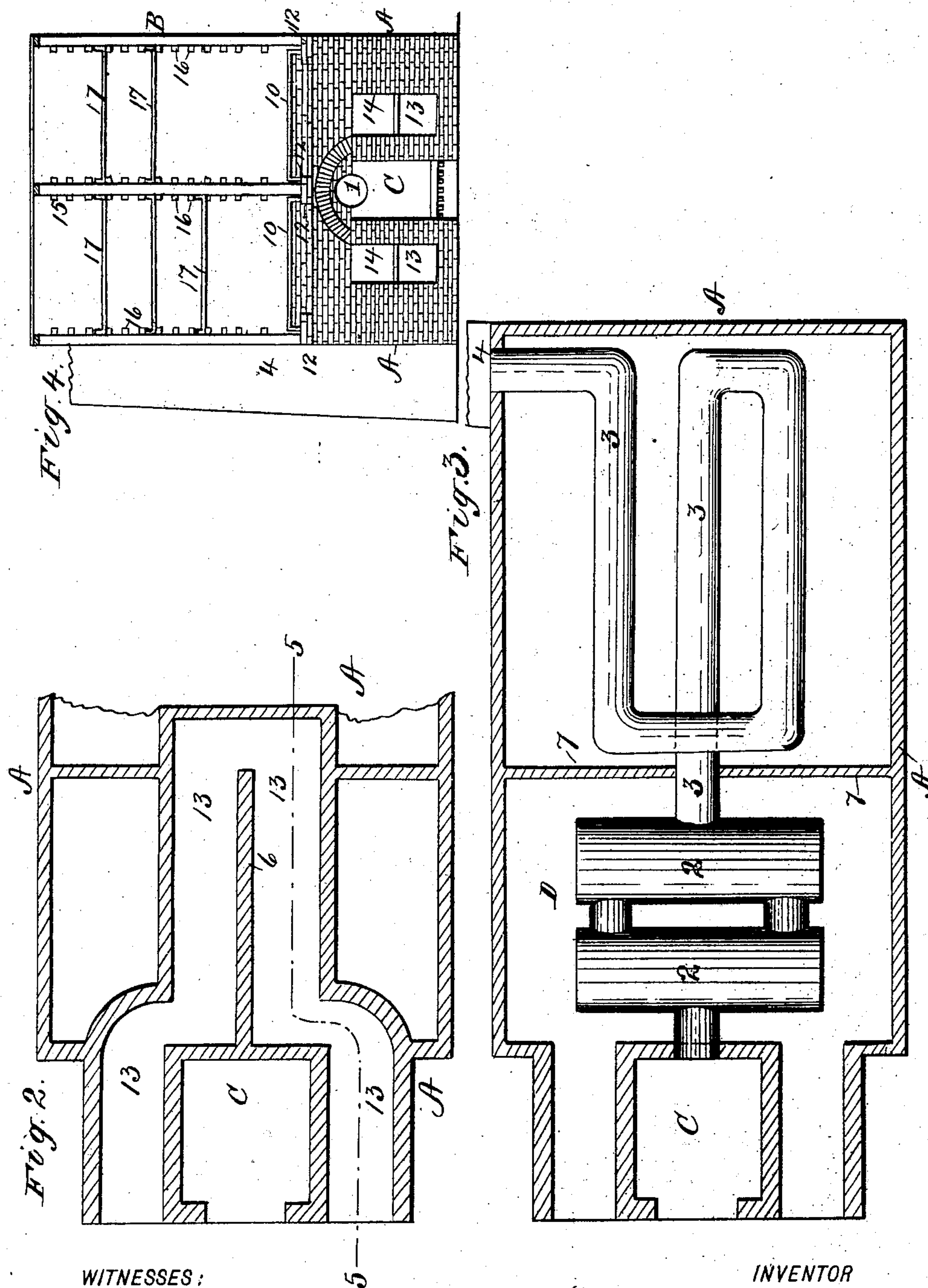
Patented Jan. 7, 1902.

W. A. CATES.
FRUIT DRIER.

(Application filed Sept. 27, 1901.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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WILLIAM A. CATES, OF FISHER, WASHINGTON.

FRUIT-DRIER.

SPECIFICATION forming part of Letters Patent No. 690,834, dated January 7, 1902.

Application filed September 27, 1901. Serial No. 76,778. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CATES, a citizen of the United States, residing at Fisher, in the county of Clarke and State of Washington, have made certain new and useful Improvements in Fruit-Driers, of which the following is a specification.

It is the object of my invention to provide an improved drier for fruit and other substances whereby the application of the heat is gradual from the entrance of the fruit or other substance into the drier to its removal therefrom and wherein the discharge of the currents of hot air into the drying-chamber proper may be easily regulated at will.

The invention involves novel features of construction, arrangement, and operation, as hereinafter set forth, and as illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of the entire apparatus. Fig. 2 is a horizontal section on the line 2 2 of Fig. 1. Fig. 3 is an irregular horizontal section on the line 3 3 of Fig. 1. Fig. 4 is a front view of the draft, the doors being removed. Fig. 5 is an irregular vertical section on the line 5 5 of Fig. 2.

Referring in the first instance particularly to Figs. 1 and 4, A indicates the base portion or furnace proper, and B the top portion or drier proper. The walls of the base portion A are preferably constructed of brick, and the top portion B is preferably constructed of light material—say wood or sheet metal. A fire-box C is located exterior to the front wall of the drier, and the products of combustion therefrom enter a pipe 1, whence they pass through drums 2 2 and thence through a serpentine or coil pipe 3, (see Fig. 3,) which enters the base of the chimney 4. The drums 2 2 rest upon a horizontal partition 5, which is supported by a central longitudinal vertical partition 6. The pipe 3 passes through a vertical wall or partition 7, with which the partitions 5 and 6 are connected. Thus a heating-chamber D (see Figs. 1 and 3) is produced, from which air heated therein may rise into the drying-chamber B through an opening 8, located at the front end of the drier proper. It will be seen that the vertical cross-partition 7 divides the chamber D from the chamber E, which is traversed by

the serpentine pipe 3. The air heated in the chamber E passes through an opening 9 into the drying-chamber proper. The passage of heated-air openings 8 and 9 may be regulated by means of sliding covers 10 and 11, respectively. Such covers, as shown in Figs. 1 and 4, have pendent side flanges which rest upon ledges 12, supported upon the base A. By sliding the covers 10 and 11 in one direction or the other it is obvious that the escape of heated air from chambers D and E into the drier proper may be regulated as required. The heat from the side walls of the fire-box C is utilized for heating air in two side passages or channels 13. (See Figs. 1 and 4.) The air heated therein passes through beneath the horizontal partition 5 of the primary heating-chamber D into the rear or supplemental heating-chamber E. It will be understood that there are two such channels or passages 13, one being located on each side of the fire-box C. Directly above these passages 13 are located two shorter passages or channels 14, which serve to convey heated air into the primary chamber D. Thus the products of combustion from the fire-box C serve to heat the chambers D and E by passing through the pipes 1 and 3 and drums 2 2, while by lateral radiation of heat the air in channels or passages 13 and 14 is heated, with the result that it is conveyed in that condition into the chambers D and E, respectively. It will be further noted that the heat in chamber D is necessarily greater than that in the chamber E, and hence the drying effect on the fruit or other substance in the chamber B will be correspondingly greater at the end nearest the furnace C.

The chamber B is divided longitudinally and centrally by a vertical partition 15, (see Fig. 4,) thus forming two compartments. Each of these is provided with side cleats or ledges 16, upon which are placed trays 17, carrying or containing the fruit or other substance to be dried. The said cleats 16 are inclined downward from the rear end to the front end of the drying-chamber B, as shown in Fig. 1, whereby the passage of the trays through the chamber is facilitated. In other words, the trays 17, being inserted at the rear end of the chamber B, may be easily pushed along and finally delivered at the front end.

During such passage the fruit is subjected to the drying action of air heated to a certain proper degree, and as the trays progress through the chamber the fruit is subjected to a gradually-increased heat, the latter reaching its maximum just previous to the removal of the fruit at the front end of the drier. Doors 18 are provided at the ends of the chamber, as shown. It is preferred and even requisite for the best effect that the trays shall be formed of wires or some reticulated material, so that air may have free passage through them, and thus come in contact with the fruit. The air may escape at the opening 19, (see Fig. 1,) which is provided at the highest part of the drying-chamber B. It will be understood that the covers 10 and 11 perform not only the function hereinbefore stated of regulating the discharge of heated air from the chambers D and E, but also prevent undue radiation of heat, whereby the fruit might be scorched. Near the lower front portion of the drying-chamber B boards 17^a may be arranged to cut off and divert the ascending current of heated air from the portion of the drying-chamber immediately above said boards. By the described arrangement of parts I secure a maximum effect from a given amount of fuel consumed in the fire-box C and at the same time so apply the heat to the fruit that it is dried gradually without scorching.

It will be noted that the upper or wooden part B of the apparatus extends so far beyond the rear end of the furnace portion A that the temperature is thereby lowered at the back of the fruit-chamber.

In practice the height of the brickwork A is about nine feet, and the drums 2 are placed far enough below the woodwork to avoid any danger of ignition of the latter.

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

1. In a drying apparatus, a base furnace portion, comprising a fire-box and two alined chambers, a conductor for the products of combustion passing through the two chambers, and side passages for conducting air arranged adjacent to the fire-box and extend-

ing into the outer chamber; substantially as shown and described.

2. In a drying apparatus, the base furnace portion comprising a fire-box proper, two alined chambers separated by a cross-partition, a smoke-conductor leading from the fire-box through the two chambers and their separating-partition, and side passages arranged adjacent to the fire-box and leading into the first chamber, the same serving for conducting heated air into the said chamber, substantially as shown and described.

3. In a drying apparatus, the combination with the drier proper, of the base furnace portion comprising a fire-box and two alined chambers separated as specified, a conductor for the products of combustion traversing the two chambers, air-pipes extending alongside the fire-box and entering the outer chamber, and shorter passages arranged above the first and opening into the first chamber, whereby air is heated in passing through both passages and enters the two chambers and thence passes into the drier proper, substantially as shown and described.

4. The combination with the drier proper, of the base furnace portion, separated therefrom by a horizontal partition having openings as specified, and comprising a fire-box which is exterior to the drier, and two chambers alined with said fire-box, but arranged beneath the drier proper, passages for conducting the products of combustion and the passages for entrance of heated air, substantially as shown and described.

5. In a drier of the class specified, the base furnace portion comprising a fire-box, and two alined chambers separated by a cross-partition, the chamber adjacent to the fire-box having a transverse and vertical partition, and a heated-air conductor arranged on each side of the vertical partition, and a smoke-conductor arranged upon the horizontal partition and extending through the outer chamber, substantially as shown and described.

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