

No. 618,832.

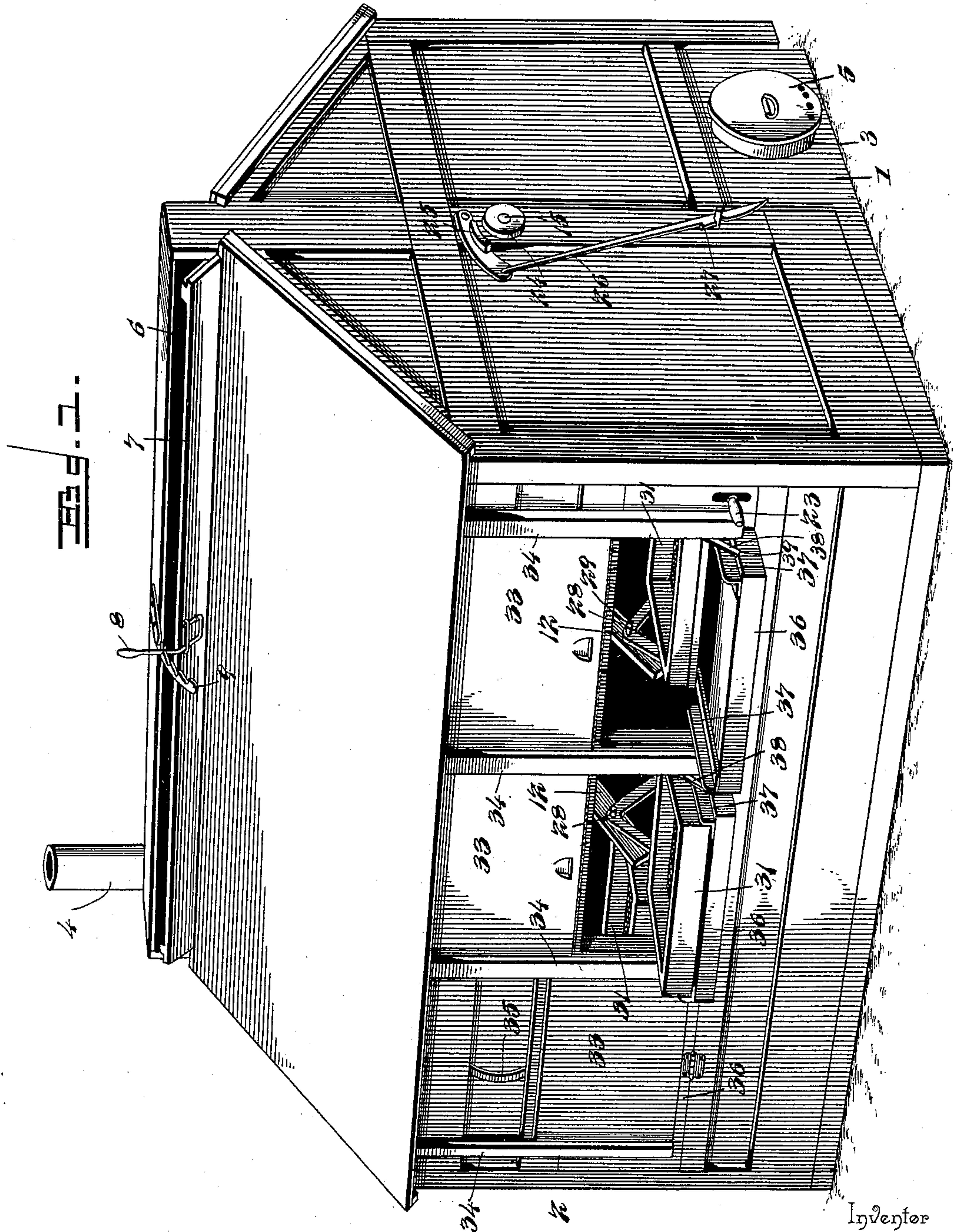
Patented Feb. 7, 1899.

A. BERGER.
FRUIT EVAPORATOR.

(Application filed July 22, 1896.)

(No Model.)

3 Sheets—Sheet 1.



Inventor

Adolf Berger

By *Leis* Attorneys,

Chas. Snow & Co.

Witnesses

E. H. Stewart
W. H. Stewart

No. 618,832.

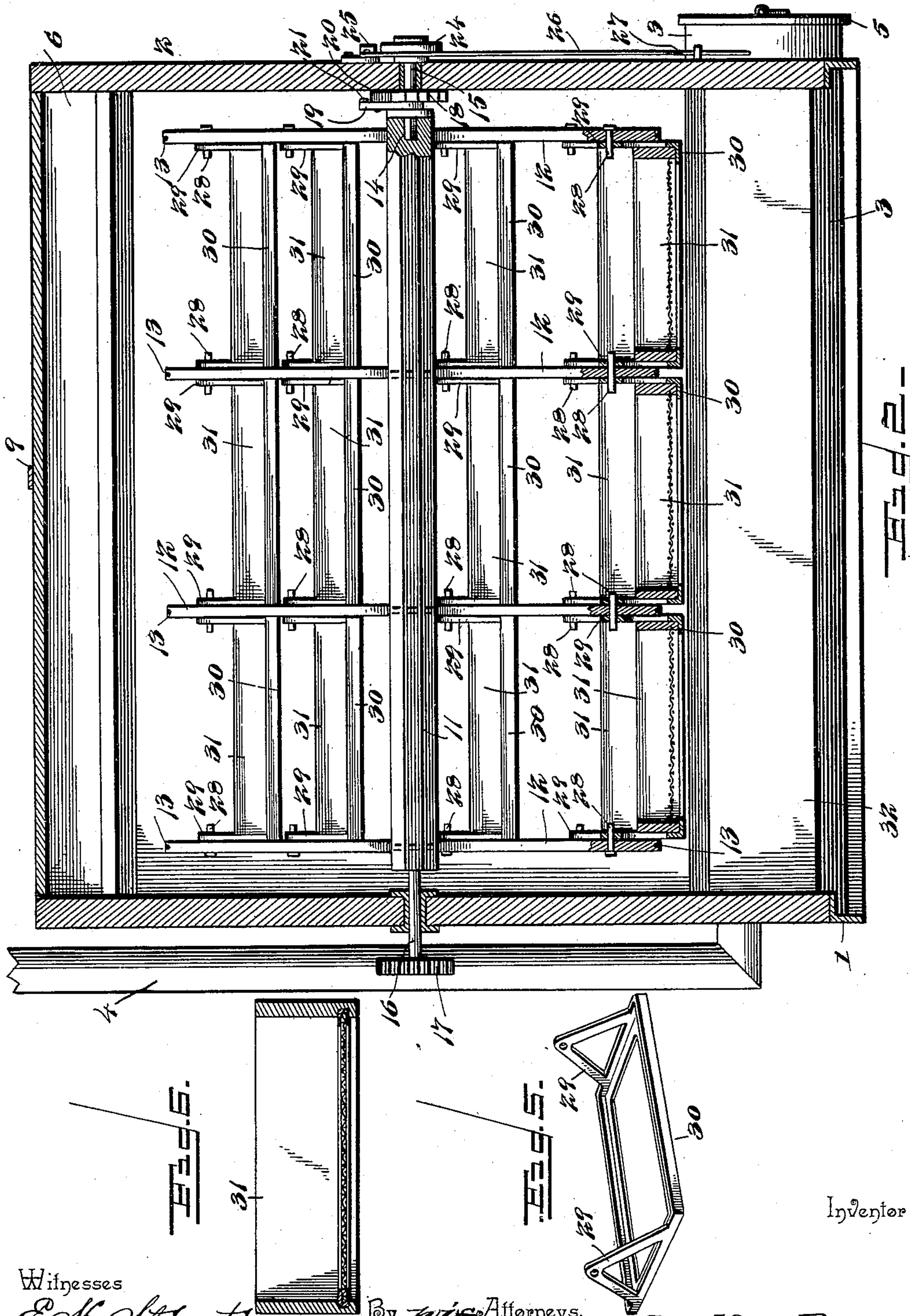
Patented Feb. 7, 1899.

A. BERGER.
FRUIT EVAPORATOR.

(Application filed July 22, 1896.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses

E. H. Stewart
J. H. [Signature]

By *his* Attorneys,

Adolf Berger
Chas. H. [Signature]

Inventor

No. 618,832.

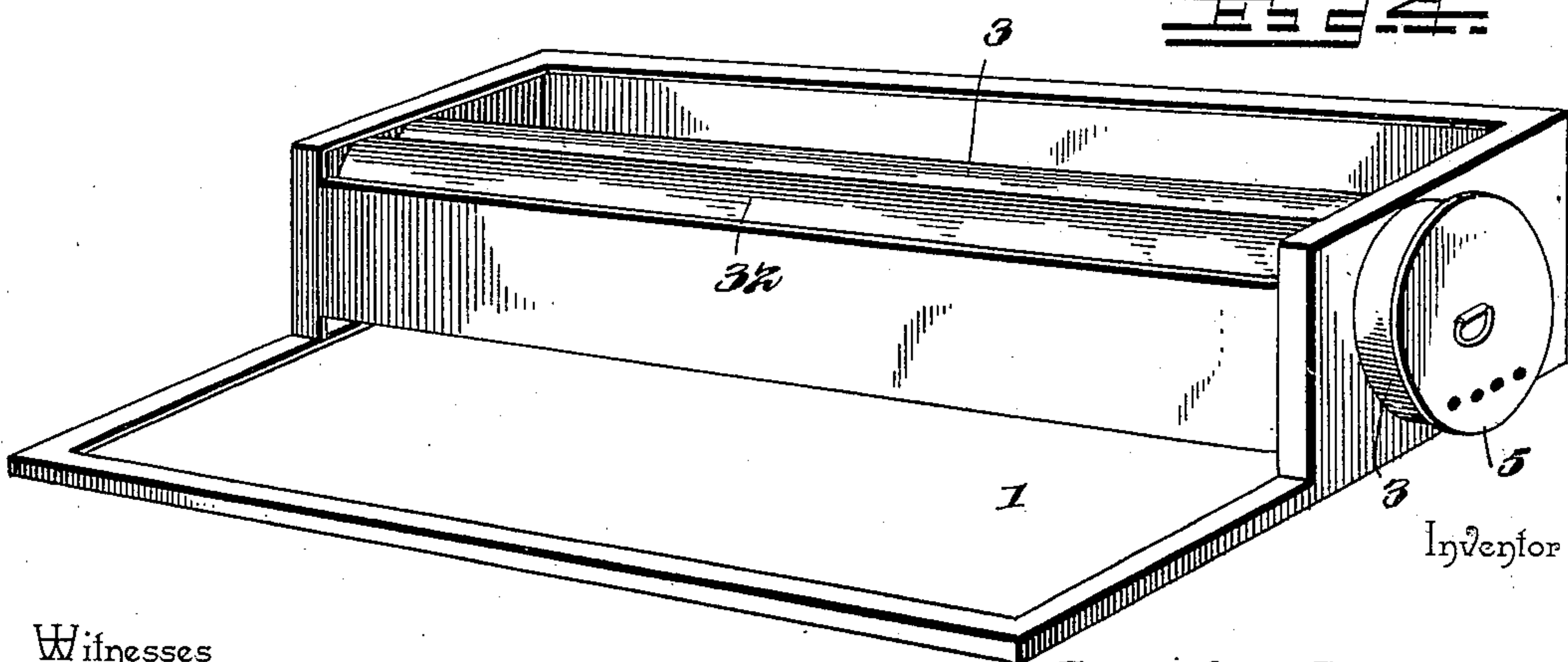
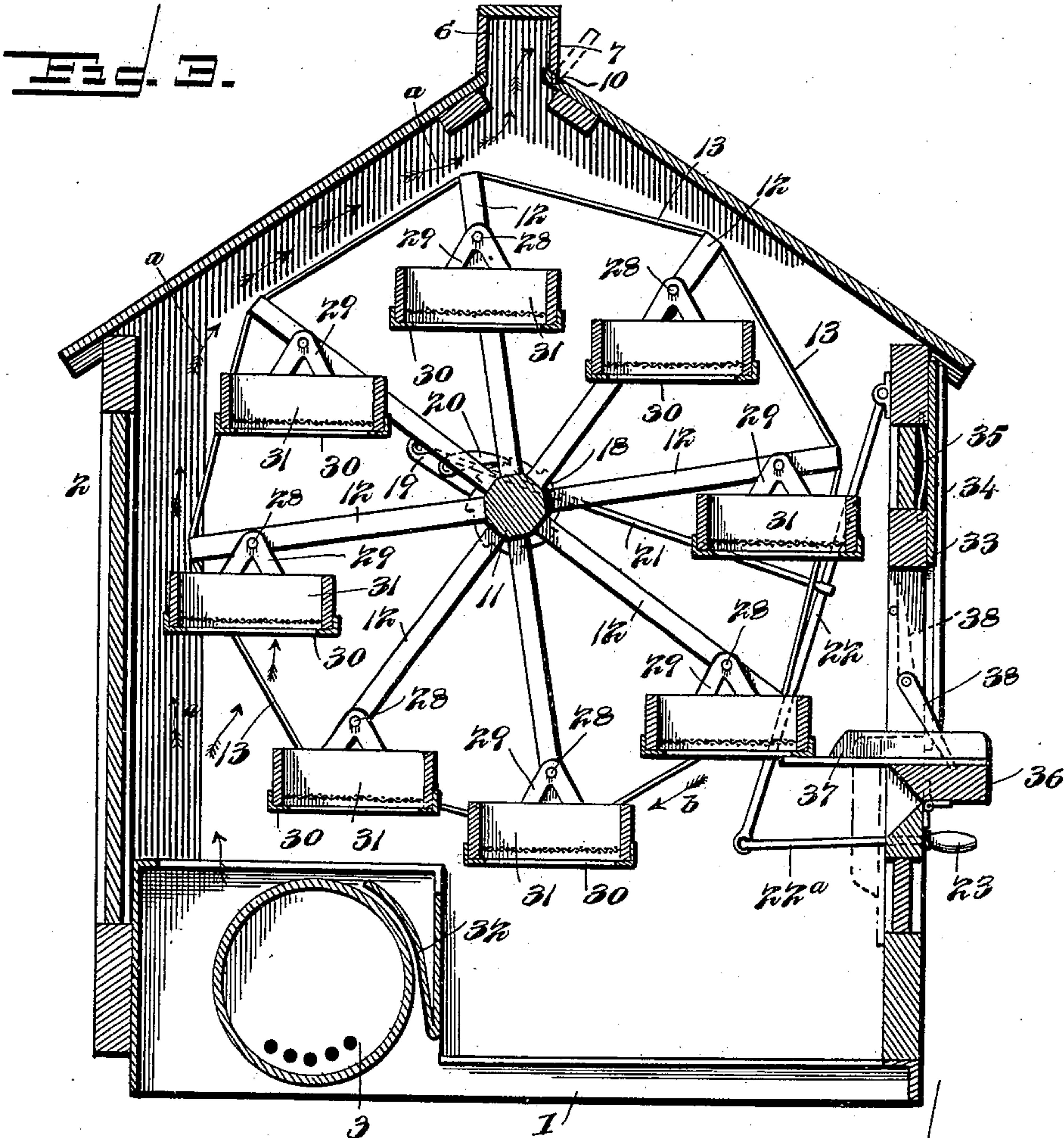
Patented Feb. 7, 1899.

A. BERGER.
FRUIT EVAPORATOR.

(Application filed July 22, 1896.)

(No Model.)

3 Sheets—Sheet 3.



Inventor

Witnesses

E. H. Stewart
E. J. [Signature]

By *his* Attorneys,

Adolf Berger

Cashow & Co.

UNITED STATES PATENT OFFICE.

ADOLF BERGER, OF CHENEY, WASHINGTON.

FRUIT-EVAPORATOR.

SPECIFICATION forming part of Letters Patent No. 618,832, dated February 7, 1899.

Application filed July 22, 1896. Serial No. 600,120. (No model.)

To all whom it may concern:

Be it known that I, ADOLF BERGER, a citizen of the United States, residing at Cheney, in the county of Spokane and State of Washington, have invented a new and useful Fruit-Evaporator, of which the following is a specification.

My invention relates to fruit drying and evaporating devices of that class employing swinging trays or fruit-receptacles; and the object in view is to provide improved means for securing a uniform drying of the fruit without the use of auxiliary operating devices for communicating motion to the tray-carrier or reel; and, furthermore, to provide simple and improved means for facilitating the removal of dried fruit and the refilling of the receptacles.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of an evaporating apparatus constructed in accordance with my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a transverse section through one series of tray-holders. Fig. 4 is a detail view in perspective of the heating device and the frame by which it is supported and upon which the frame of the evaporator rests. Fig. 5 is a view in perspective of one of the tray-hangers. Fig. 6 is a detail section of one of the trays.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates an open base, upon which is mounted the casing 2 of the improved evaporator, and at one side of the base is arranged a horizontal longitudinal furnace or heating device 3, provided at one end with a draft-flue 4 and at the other end with a removable cap 5 to provide for the introduction of fuel and the control of the draft.

The casing is provided with a pitched or gabled top or roof, at the apex of which is arranged a longitudinal ventilator 6, having a ventilating-door 7, adapted to be opened to a greater or less extent to control the upward draft or current of heated air through the casing, as indicated by the arrows *a* in Fig. 3.

Any suitable means may be employed in connection with this ventilator-door to secure it in the desired position, such as a spring latch-tongue 8, coöperating with a toothed segment or rack 9, the lower edge of said door being provided with pins 10, fitting in sockets in the contiguous portion of the top or roof.

Mounted within the casing upon a horizontal longitudinal axis is a reel consisting of a central core or shaft 11 and a plurality of armed spiders 12, the extremities of the arms being engaged by a circumferential wire or cable 13. The shaft or core is provided at one end with a socket 14 to receive an angular stub shaft or spindle 15, mounted upon the contiguous end wall of the casing, and at the other end with an alined spindle 16, which may be fitted with a gear-wheel 17 or its equivalent, by which, when preferred, motion may be communicated to the reel.

In connection with the apparatus I employ means for imparting a step-by-step movement to the reel, and in the construction illustrated said means consist of a ratchet-wheel 18, carried by said stub shaft or spindle 15, and a swinging arm 19, mounted coaxially with said ratchet-wheel and carrying a pawl 20 to engage the teeth of the ratchet-wheel. Connected with said swinging arm by means of an intermediate rod or link 21 is a lever 22, preferably mounted within the casing and provided with an operating-rod 22^a, which projects through the front wall and is fitted with a knob or handle 23. The stub shaft or spindle is extended to the outer surface of the end wall of the casing and is fitted with a brake-wheel 24, in contact with which is arranged a brake-shoe 25, provided with an operating-rod 26, and the brake-shoe may be locked in contact with the brake-wheel by means of a catch consisting of a notch 27 on the operating-rod and a contiguous stud on the wall of the casing. Projecting inwardly or toward each other from contiguous or facing sides of adjacent arms of the spiders are fulcrum-pins 28, which engage bearings or openings in the end brackets 29 of the tray hangers or holders 30, said hangers or holders consisting of horizontal open frames having flanged edges to prevent lateral displacement of the trays 31, which are of the ordinary construction and which are provided with re-

ticulated or wire-cloth bottoms. This tray-carrying reel, by reason of the arrangement of the furnace or heating device contiguous to and parallel with one side of the casing, is exposed at one side only to the heat rising from said furnace, and in order to confine the column of heat to the trays arranged upon the contiguous side of the reel a deflector 32 is arranged contiguous to the furnace. Therefore in operation, after the trays have been filled by measure to secure an approximate equilibrium thereof, the application of heat to one side of the reel dries the fruit at that point and thereby lightens the reel at one side and causes the latter to feed slowly in the direction indicated by the arrow *b* in Fig. 3. This operation continues until the entire contents of the reel have been uniformly dried.

In order to provide for removing the dried contents of the trays and refilling the same, I have provided the front of the casing with openings having slide-doors 33, fitted in suitable guides 34 and arranged in operative relation with pressure or friction springs 35, by which they are adapted to be held in their elevated positions or during the removal of the contents of the trays. Arranged in the lower portions of said openings are hinged outwardly-folding shelves 36, adapted to be arranged in an approximately horizontal position after the slide-doors have been elevated and normally held in their folded positions by means of the slide-doors, which when closed extend at their lower edges below the planes of the upper edges of the shelves, and thus prevent the downward folding thereof. These shelves are provided with terminal flanged guide-arms 37, which project into the casing in an approximately horizontal direction when the shelves are in their operative positions, whereby a tray may be removed from the hanger or holder in which it is seated and may be supported upon the shelf preparatory to or during the operation of removing its contents or refilling the same. In order to prevent the shelves from folding prematurely, I employ pivotal braces 38, mounted upon the guides 34 and adapted to engage sockets 39 in the extremities of the shelves.

By reason of the inwardly-yielding construction of the triangular or V-shaped terminal brackets of the tray hangers or holders a hanger may be dismounted with facility from the spider-arms, upon which it is mounted.

From the above description it will be seen that the feeding motion of the reel preferably depends upon the rate of evaporation of the fruit and is controlled thereby to secure the uniform drying of the contents of the trays, the amount of contained heat or the rapidity of the escape thereof being controlled by the ventilating device arranged at the top of the casing. When removing dried fruit and refilling the trays, the step-by-step feeding mechanism is employed to move the reel to bring the trays successively within reach of

the front door-openings. When about to engage in this operation, the brake is secured in contact with the brake-wheel to prevent excessive movement of the reel, and after a series of trays has been manipulated the operating-rod, which is in connection with the ratchet mechanism, is drawn outwardly to move the reel sufficiently to bring the next series of trays within reach. The reel is prevented from turning in either direction by reason of the increase of weight, due to the green fruit, by means of the brake above mentioned.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a fruit-drier, the combination of a drying-chamber having a ventilating-opening in its top, a balanced tray-carrying reel mounted upon a horizontal axis within the drying-chamber, and a heat-generator arranged under one side of the reel whereby the direct heat passes up in contact with the trays at only one side of the reel, and as the contents of the trays at said side are dried the reel is lightened at that side and is thus automatically fed to bring other portions thereof in the path of the ascending heat column, the trays being applicable and removable at the opposite side of the reel from said heat-generator, substantially as specified.

2. In a fruit-drier, the combination of a drying-chamber having a ventilating-opening in its top, a balanced tray-carrying reel mounted upon a horizontal axis within the drying-chamber, a heat-generator consisting of a cylinder arranged parallel with and contiguous to one side of the reel whereby the direct heat passes up in contact with the trays at only one side of the reel and hence causes the contents of the trays at that side of the reel to dry, and a deflector 32 arranged in operative relation with the heating-cylinder to direct the heat against the contiguous trays and shield those at the side opposite to the heat-generator, the trays being adapted to be applied and removed at the opposite side of the reel from the heat-generator, substantially as specified.

3. In a fruit-drier, the combination of a casing provided in its top with a ventilator and means for controlling the extent of opening thereof, and also having in one side openings to give access to the interior of the casing, a balanced tray-carrying reel mounted upon a horizontal axis in the casing, and a heat-generator arranged longitudinally under that side of the reel opposite to said side openings in the casing, whereby the heat ascends in a column enveloping the trays at the side of the casing contiguous to the generator and, by drying the contents of said trays, reduces the weight at that side and allows it to be

overbalanced by the weight of the green fruit at the opposite side of the reel, substantially as specified.

4. In a fruit-drier, the combination of a casing, a horizontal open metallic base upon which the casing is removably supported, and a heat-generator having a cylinder secured to the base and arranged parallel with and contiguous to one side wall of the casing, substantially as specified.

5. In a fruit-drier, the combination with a casing, a heat-generator, and a tray-carrying reel mounted within the casing, of doors arranged to close openings in the front wall of the casing, and hinged shelves arranged at the bottoms of the door-openings and provided with inwardly-extending arms to support a tray when dismounted from the reel, substantially as specified.

6. A fruit-drier having a casing, a heat-generator, and a tray-carrying reel mounted in the casing, doors closing openings in the front wall of the casing and mounted to slide vertically in suitable guides thereon, tray-supporting shelves hinged at the bottoms of the door-openings and normally arranged with

their upper edges above the plane of the lower edges of said doors whereby they are held closed by contact with the doors, and pivotal braces for securing the shelves in their open positions, substantially as specified.

7. In a fruit-drier, the combination with a tray-carrying reel and a heat-generating device, of feeding mechanism including a ratchet-wheel, a swinging arm carrying a pawl to engage the ratchet-wheel, an operating-lever mounted within a casing and connected with said arm, an operating-rod connected with the lever and having an exposed knob or handle arranged contiguous to the outlet-doors of the casing, and a brake mechanism including a brake-wheel, a brake-shoe, and means for securing the shoe in frictional contact with the brake-wheel, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ADOLF BERGER.

Witnesses:

ANTON BLEFGEN,
FREDRIC J. ZESIGER.