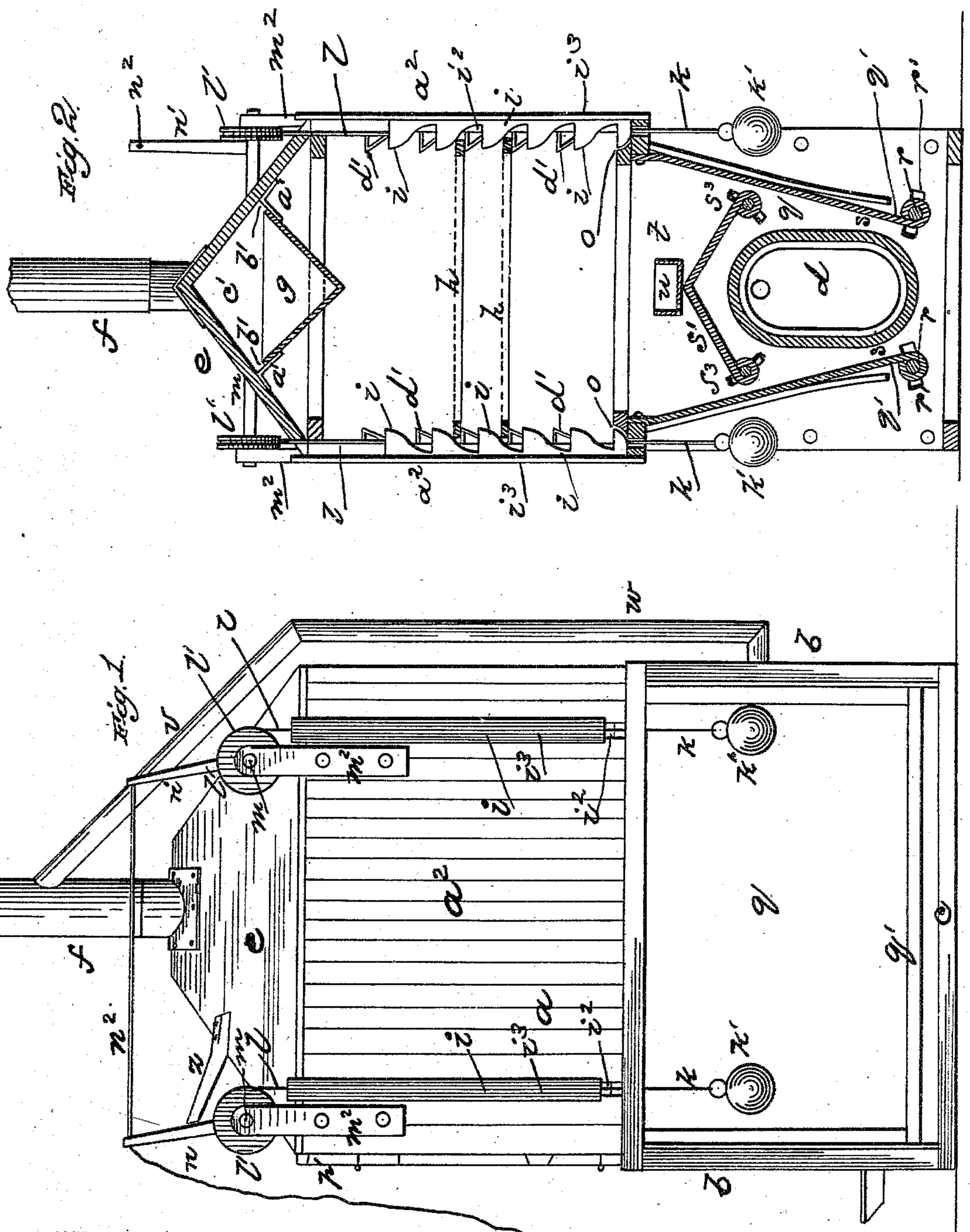
(No Model.) 2 Sheets—Sheet 1.

C. J. GEIGER.

FRUIT DRIER.

No. 295,382. Patented Mar. 18, 1884.



WITNESSES
E. H. Bates
John T. Morrow

INVENTOR
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his ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

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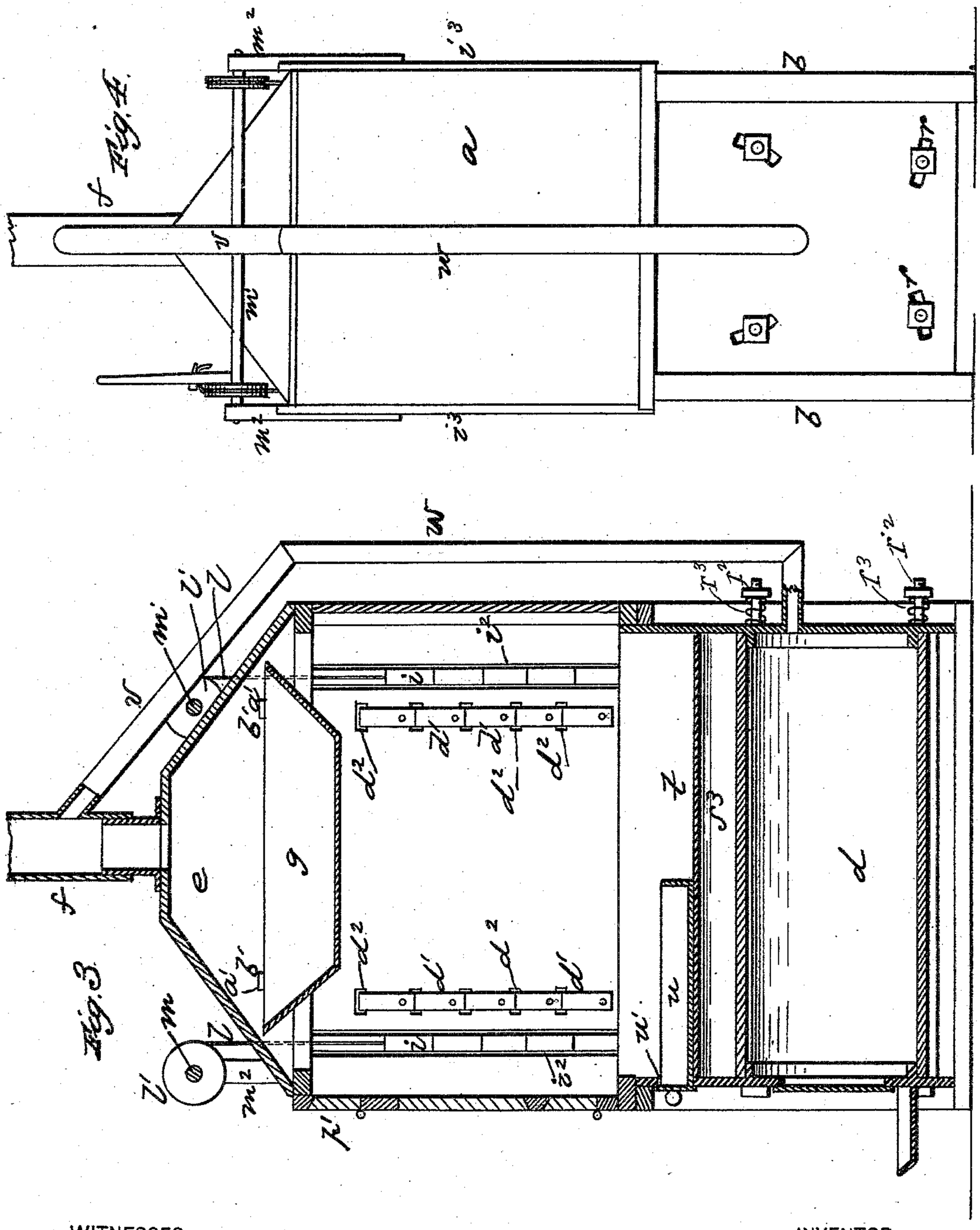

Fig. 3.

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UNITED STATES PATENT OFFICE.

CONRAD J. GEIGER, OF ASHLEY, ILLINOIS.

FRUIT-DRIER.

SPECIFICATION forming part of Letters Patent No. 295,382, dated March 18, 1884.

Application filed July 28, 1883. (No model.)

To all whom it may concern:

Be it known that I, CONRAD J. GEIGER, a citizen of the United States of America, residing at Ashley, in the county of Washington and State of Illinois, have invented certain new and useful Improvements in Fruit-Driers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a side view. Fig. 2 is a vertical cross-section. Fig. 3 is a vertical section, and Fig. 4 is an end view.

This invention has relation to fruit-driers, and is designed as an improvement on the invention shown and described in the Letters Patent No. 251,213, granted to me December 20, 1881; and it consists in the novel construction and arrangement of devices, as will be hereinafter fully described, and particularly pointed out in the claims appended.

Referring by letter to the accompanying drawings, *a* designates the case-wall, which is designed to be rectangular in form, and supported upon standards *b*, based upon sills *c c*, which may also serve as a support for the front and rear bearings of the furnace *d*, this furnace being designed to extend centrally from front to rear, as shown in the drawings. The top *e* of the case *a* is made pyramidal, or with sides inclining inward, so as to gather the moisture-laden air, which is designed to be passed out of the drier through an ejection-pipe, *f*, which extends centrally upward from case-top. In this top is suspended by hangers *a'* an inverted pyramidal or convex deflector, *g*, which extends below the lower opening of the ejection-pipe *f*, and is intended to prevent a direct draft or central current in the drier, the air being drawn over the inclined walls of the deflector, and passing through the openings *b'* over its edges into the chamber *c'*, whence it is drawn upward through the pipe *f*.

h designates the shelves or fruit-supporting trays, which are formed with interlacing cords or wires, or in any suitable manner to provide for the free passage of the air, these shelves being supported on spring-steps *d'*, secured to the side walls, a^2, of the case-wall *a*, near each end, and arranged in series, one step above another, as shown, their step ends being adapted to be driven by compression into recesses d^2, provided for them in the side walls, a^2. Elevating rack-bars *i*, provided with steps *i'* corresponding in number with the number of spring-steps *d'*, are arranged alongside the spring-steps in vertical openings i^2, extending the full height of the side walls, a^2. The backs of the rack-bars are provided with face-strips i^3, which extend above the rack-bars the entire length of the vertical openings i^2, and serve to retain the heat in the drier, act as guides for the rack-bars, and prevent them from projecting too far inward. The steps of the rack-bars are on horizontal planes lower than the step ends of the spring-steps. The lower ends of the rack-bars are provided with cords *k* and weights *k'*, to hold them in their normal positions, and to return them to said positions after they have been elevated. Cords *l*, attached to the upper ends of the rack-bars, lead up through the top *e* of the drier and around grooved wheels *l'* on the rock-shafts *m m'*, which are journaled in bearings in the upper ends of uprights m^2, extending above the case-top. The upper ends of the lever-arms *n n'* are connected by a cord, n^2, so that they will operate in unison. An operating-cord, n^3, is secured to the top of the lever-arm *n*, and extends by the wheel next to said lever and down the front of the drier within reach of the attendant. The first steps of the rack-bars are dropped in notches *o* in the side sills of the case-walls, so as to be below their upper faces.

The fruit-trays *h* are slipped to place on the sills of the case-wall through a suitable door at the front end of the drier above the furnace. The trays are lifted from this point to the first spring-steps by drawing on the cord n^3, which lifts the rack-bars, and the bottom steps of the same engage the frames of the tray and raise it. The side edges of the tray-frames compress the spring-steps until the frame passes the spring-steps, when they immediately spring inward beneath the frame, when the rack-bars may be dropped to place, and the spring-steps will hold the tray. Another tray may be placed on the sills and elevated in the same manner, the tray above being elevated to the

next set of spring-steps, and so on throughout the entire series until the top spring-steps have been reached, a door, p', being provided at this point, through which the uppermost tray may be removed when the drying and bleaching processes have been completed.

The front and rear walls of the drier may be provided with windows, through which to inspect the fruit in process of drying.

The jacket q, within which the furnace is seated, is made in upward-flaring form, its upper edges being connected to the case-frame, and the lower edges, q', are bent around rods r, having bearings in slots r' in the end bearings of the furnace, said rods being held in place by nuts r^2. Springs r^3 are interposed between the nuts r^2 and the end bearings of the furnace, to allow for the expansion and contraction of the metal. Long air-inlets s are left between these lower edges and the furnace-wall, which should be about one-half inch wide, but the width may be varied by shifting the rods in the slots before mentioned.

Extending over the top of the furnace is a gable-roof-shaped deflector, s', the lower edges are rodded, and the rods provided with slotted bearings, springs, and nuts, similar to the lower edges, q', of the jacket q. The long spaces s^3, between this deflector and the jacket-walls, are provided for the passage of the heated or rarefied air from the furnace-chamber t, which is arranged above the deflector s', and below the drying-chamber. The heating-chamber t is provided with a small metal drawer, u, which is passed into it through an opening, u', in the front bearing of the furnace, and comes directly over the furnace. This drawer is intended for the sulphur which is used in bleaching the fruit, the fumes passing in the same manner as the heated air does.

In order to draw off the moisture-laden air, a pipe-connection, v, is formed on the first section of the ejection-tube, whereby it is connected by a flue-pipe, w, to the furnace, so that the heated air and products of combustion will pass directly into the upper part of this section of the ejection-tube and create a strong suction, which, assisted by the upward influence of the hot air passing into the case below from the furnace-chamber, will draw off the moist air in a thorough manner, and yet without rendering the air in the case too hot, which might scorch the fruit, because the heat in the drier is not proportioned directly to the heat of the furnace, a more rapid draft being set up by an overheated furnace, which changes the air in the case very quickly, so that the furnace-chamber acts as an automatic governor to prevent scorching, and does not require constant watching.

z designates a stop-arm, against which the lever-arm n strikes in its backward movement, and prevents the arms $n\ n'$ from moving too far to the rear.

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

1. In a fruit-drier, the case-wall provided with the recessed sills, the vertical openings for the rack-bars, and the recesses for the step ends of the spring-steps, in combination with rack-bars with the extended face-strips, the cords and weights at the lower ends of said rack-bars, the cords extending to the grooved wheels on the rock-shafts above the case-top, the rock-shafts having the connected lever-arms, and the operating-cord for lifting the fruit-trays within the case-wall, substantially as specified.

2. The combination, with the furnace extending the length of the drier and centrally thereof, of the flaring jacket, the lower edges of which are rodded, the ends of the rods bearing in slots in the end bearings of the furnace, and having the springs and nuts at the ends for adjusting and regulating the expansion and contraction of the metal, and the gable-shaped deflector having its edges rodded similarly to the edges of the jacket-walls, substantially as specified.

3. In a fruit-drier, the furnace-chamber t, provided with the drawer for containing sulphur for bleaching the fruit, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CONRAD J. GEIGER.

Witnesses:

JOHN A. MORROW,

PHILIP C. MASI.