(No Model.) 2 Sheets—Sheet 1.

C. O. CHAPLIN.

FRUIT DRIER.

No. 246,723. Patented Sept. 6, 1881.

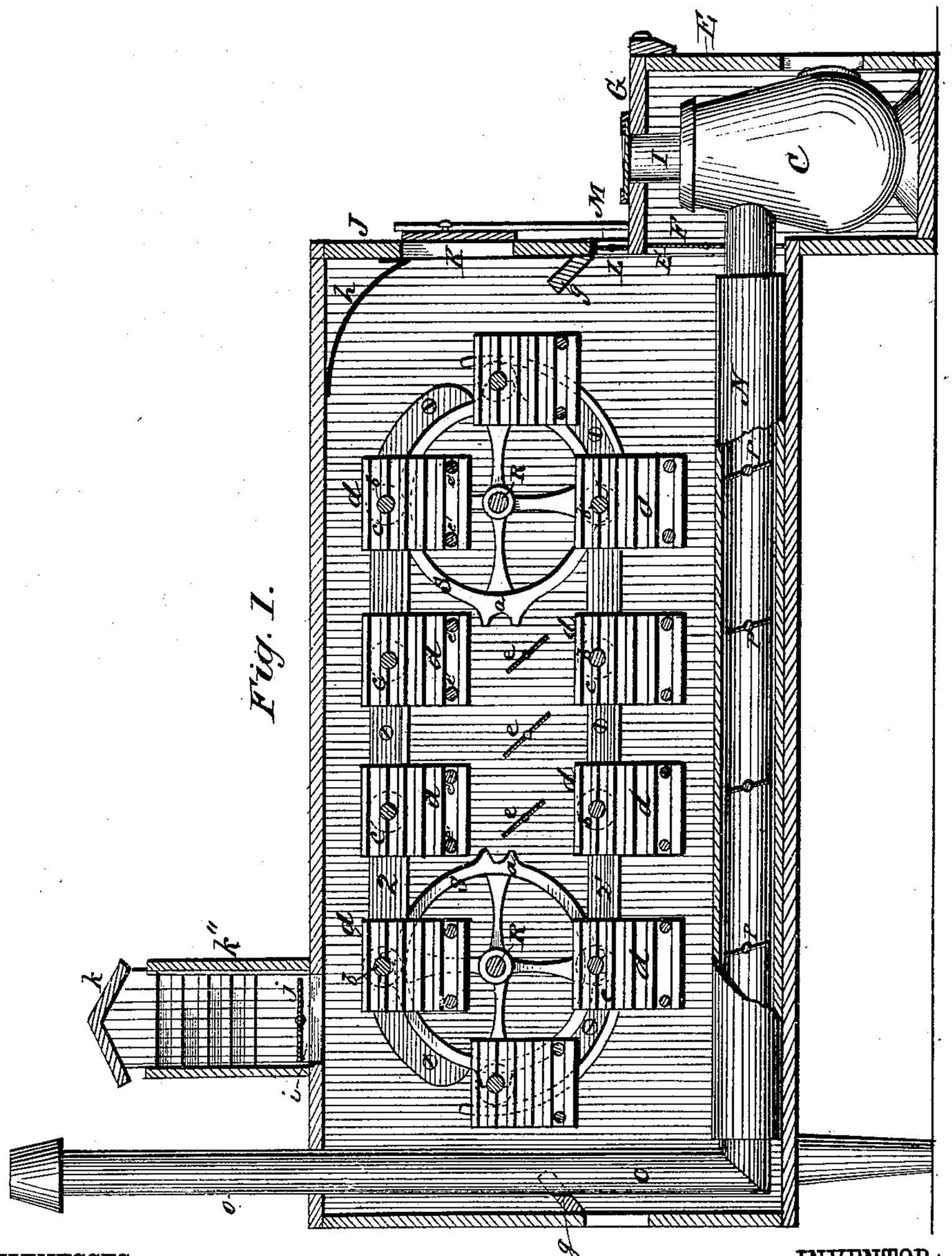

Fig. 1.

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Fig. 2.

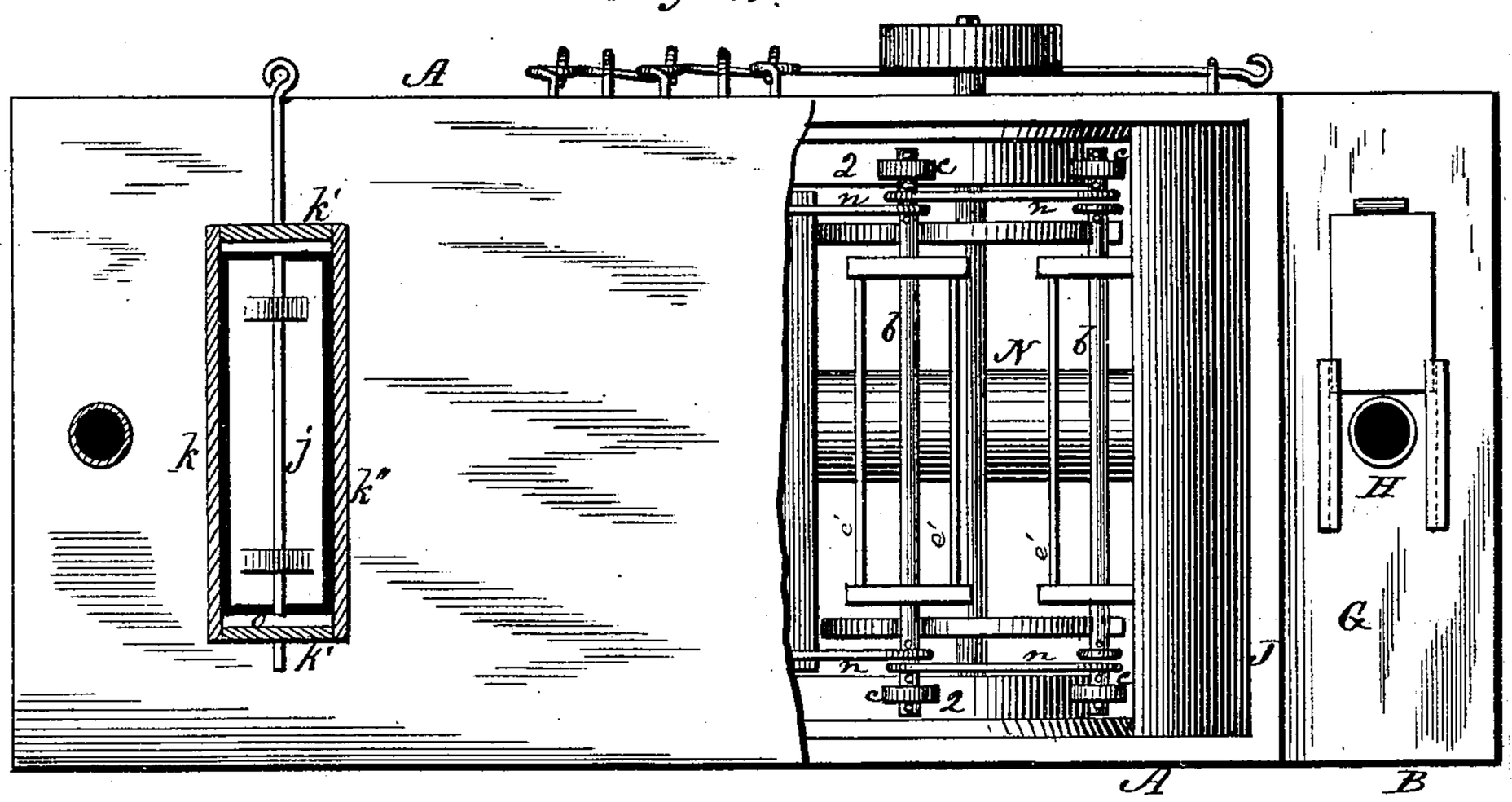
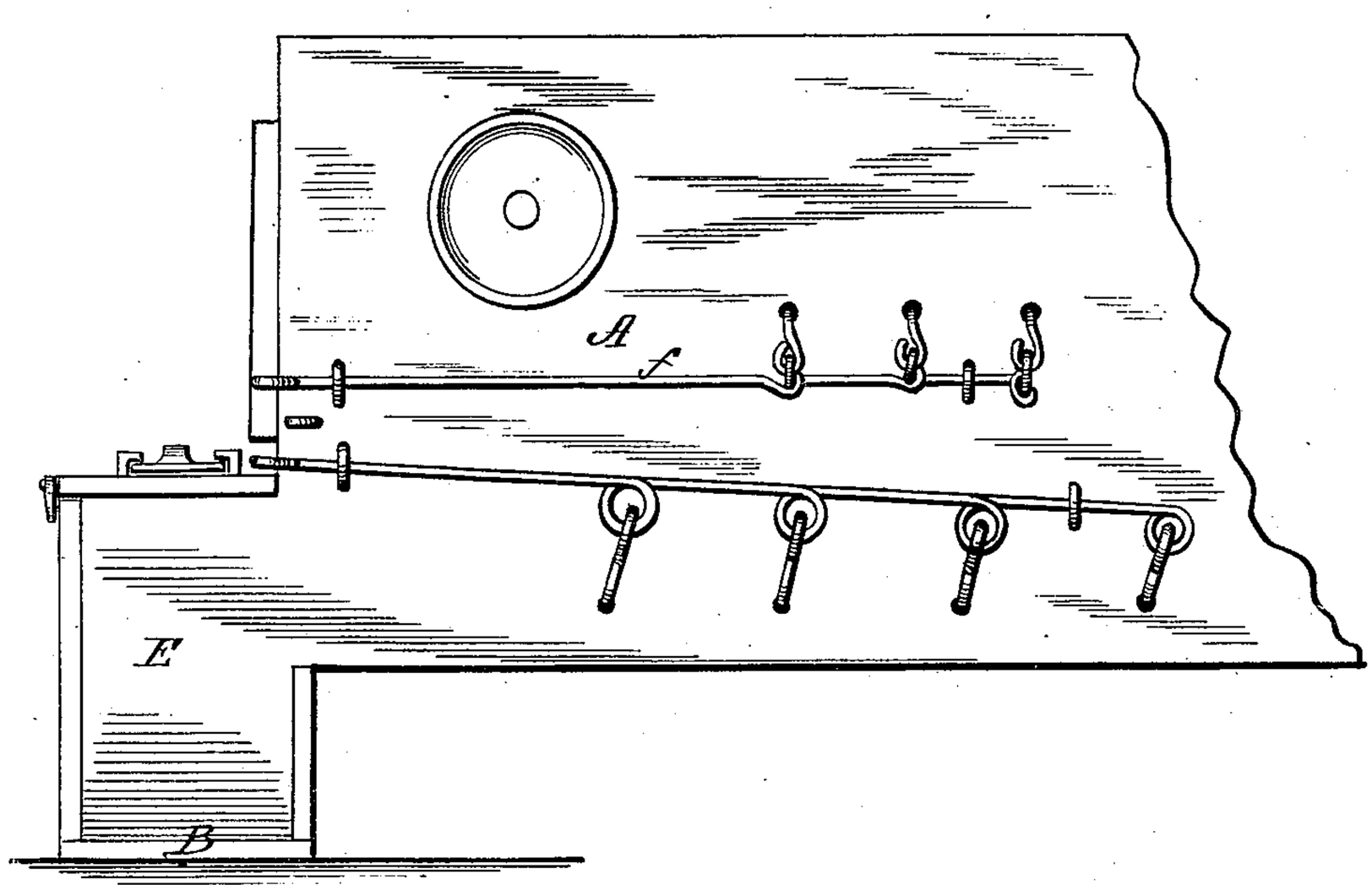


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES O. CHAPLIN, OF RIDGEWAY CORNERS, NEW YORK.

FRUIT-DRIER.

SPECIFICATION forming part of Letters Patent No. 246,723, dated September 6, 1881.

Application filed March 24, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES OLIVER CHAPLIN, of Ridgeway Corners, in the county of Orleans and State of New York, have invented a new and useful Improvement in Fruit-Driers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of my improved fruit-drier. Fig. 2 is a plan view with a part of the frame broken away, and Fig. 3 is a side elevation of the front part of my improved fruit-drier.

My invention relates to improvements in fruit-driers; and it consists, first, in the combination, with a drying-chamber provided with an opening for the introduction of the fruit-trays, of a furnace-chamber arranged partly below the drying-chamber, and provided with a horizontal top having a fuel-opening leading into the top of the furnace, said top serving as a support for the cylindrical upper end of the furnace, as a stand for the operator in introducing the trays into the drying-chamber, and as a support for the operator in introducing fuel into the top of the furnace.

My invention further consists of a series of cars having their axles connected by links and their wheels running on tracks curved at their ends, the cars being provided with plates pivoted on the axles, and each provided with a series of grooves on their inner faces adapted to receive removable trays for the fruit, said plates swinging by gravity at the ends of the track, so that the fruit side of the trays will always be uppermost.

My invention further consists in certain details of construction hereinafter more fully set forth.

In the accompanying drawings, A A represent the parallel walls of my improved fruit-drier, preferably of brick built on the ground, the latter being dug out rectangularly to receive the walls B, forming the side walls of the room or receptacle E for the furnace C.

The front wall of the furnace-room is provided with an opening opposite the furnace-door, by means of which fuel may be fed into the furnace, and cold-air passages at the sides, whereby cold air to be heated enters the furnace-room.

The back wall of the furnace room or chamber E is provided with an opening, E′, for the passage of the air heated by the furnace, which is provided with a damper, F, journaled in the side walls of the drier, whereby the inflow of heated air passing into the drier may be regulated as desired.

The top G of the furnace-room is provided with an opening, H, to receive the cylindrical end I of the furnace C.

By this construction it will be seen that fuel can be fed into the furnace into its cylindrical end or top without the necessity of introducing it through the furnace-door, the top of the furnace-room being in the horizontal plane of the work-room in which the trays are introduced into the cars carrying them, as hereinafter more fully described.

J represents the end wall of the drying-chamber next the furnace, and is provided with an opening, K, closed by a vertically-sliding door, which can be raised or lowered to allow the passage of the trays into the drying-chamber.

L is a horizontal opening in the lower end of the end wall, J, for the passage of cold air into the drying-chamber. The inflow of cold air through the passage L is regulated by a damper, M, journaled in the side walls of the fruit-drier.

N represents a drum, connected at one end with the furnace C, passing horizontally and longitudinally through the drying-chamber, and provided at its outer end and within the drying-chamber with a vertical pipe, O, passing out of the top of the drier and carrying off the products of combustion. The drum N is provided with a series of dampers, P, having their shafts journaled in one side of the drum and in one of the side walls of the drier. The damper-shafts, at their outer ends, are provided with cranks secured to a rod, by means of which the dampers may be simultaneously operated to increase or decrease the draft in the drum, as may be desired.

Q Q are tracks provided with flanges, bolted to the inner walls of the drying-chamber and

lying opposite each other. The ends of the tracks Q are curved downwardly, as seen in the drawings.

Q′ Q′ are tracks provided with flanges, and secured to the side walls of the drying-chamber parallel with and beneath the upper tracks, Q Q. The ends of the tracks Q′ Q′ are curved upwardly, and are adapted to receive the car-wheels after they have passed over the upper tracks.

R R are axles journaled in the side walls of the drying-chamber, and each provided with wheels S S, keyed to the axles and having recesses *a a* on their peripheries, adapted in their revolutions to engage with the car-axles *b*, having wheels *c* running on the track, and impart to the axles motion in either direction. The car-axles are connected together by a series of links, *n*, hinged at each end to a car-axle, and forming an endless chain.

The journal of one of the wheels S is operated by a crank or gear outside the drier-wall, by means of which the endless chain of links and car-axles is revolved. The recesses in the wheels S in their revolutions engage with a car-axle and carry it forward along one of the tracks, and as the wheel revolves the recess becomes disengaged from the axle.

d d are plates provided with parallel grooves on their inner faces and having holes above their centers, through which the car-axles pass. The trays carrying the fruit to be dried are inserted in the grooves, and in the revolution of the plates as the endless chain is operated the plates pivoted to the car-axles and hung thereto above their centers will always assume by gravity an upright position, holding the fruit up. The lower ends of each opposite pair of plates are connected together by rods *e′*.

By this construction it will be seen that the trays containing the fruit to be dried are readily introduced into the grooves in the plates *d* through the opening in the end wall of the drying-chamber, which is then closed by its sliding door, and, motion being imparted to the recessed wheels by the crank or other gear, the cars are impelled along the upper track, down its curved end to the curved end of the lower track, and thence along said track, and back again to the upper track.

A series of dampers, *e*, journaled in the side walls of the drier and operated simultaneously by a single rod, *f*, are arranged in the drying-chamber. These dampers may be made to overlap each other, and their function is, when operated, to retard the passage of the hot air through the drying-chamber. The ends of the drying-chamber are provided with inclined boards or shields *g g* for guiding or directing the current of air to the fruit in the trays, and a shield, *h*, is secured to the furnace end of the drying-chamber, over the opening for hot air, said shield being curved downward at its upper end to guide or direct the hot air on the fruit.

An opening provided with a pane of glass is made at the outer end of the drying-chamber, to see into the interior when desired.

The air, heated and introduced into the drying-chamber as above described, passes out through an opening, *i*, in the top of the drying-chamber, regulated by the damper *j*. Over the top of the opening *i* is erected a rectangular box, *k*, provided with horizontal parallel grooves on the inner faces of its ends *k′*, adapted to receive the trays, on which, preferably, the peelings and cores or fruit are placed to be dried from the waste heat. The distance between the ends or standards *k′* is the same as between the plates *d d* pivoted on the car-axles, so that the same sized trays may be employed. The box *k* is provided with a door or doors, *k″*, by means of which access can be had to the box *k*.

What I claim is—

1. In a fruit-drier, the combination, with a drying-chamber provided with an opening, K, for the introduction of the trays, of the furnace-chamber E, arranged partly below the drying-chamber and provided with a horizontal top, G, having a fuel-opening, H, leading into the top of the furnace, said top G serving as a support for the cylindrical upper end of the furnace, as a stand for the operator in introducing the trays, and as a support for the operator in introducing fuel into the top of the furnace, substantially as described.

2. The combination, with the grooved plates *d*, connected by the rods *e′* and hung on the car-axles above their centers, links *n*, and tracks Q Q′, of the wheels S, having recesses *a a*, adapted to engage with the car-axles, whereby a continuous rotary motion is imparted to the trays, substantially as described.

3. The combination, with the furnace-chamber E, provided with the opening E′, having the damper F, of the drying-chamber furnace C, drum N, vertical pipe O, opening *i* in the top of the drying-chamber, regulated by the damper *j*, and drying-box *k*, substantially as described.

4. The combination, with the drying-chamber provided with the opening E′, of the inclined lower shields, *g g*, and upper shield, *h*, substantially as described.

5. The combination, with the drying-chamber provided with an opening, K, for the introduction of the trays, of the furnace-chamber E, constructed and arranged as set forth, and having the hot-air opening E′, governed by damper F, furnace C, drum N, provided with a series of dampers simultaneously operated, and pipe O, substantially as described.

6. The combination, with the drying-chamber provided with the opening *i* in its top, having a damper, *j*, of the rectangular box *k*, having parallel grooves in the ends *k′*, substantially as described.

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