

(No Model.)

H. FITTS.
FRUIT DRIER.

No. 291,320.

Patented Jan. 1, 1884.

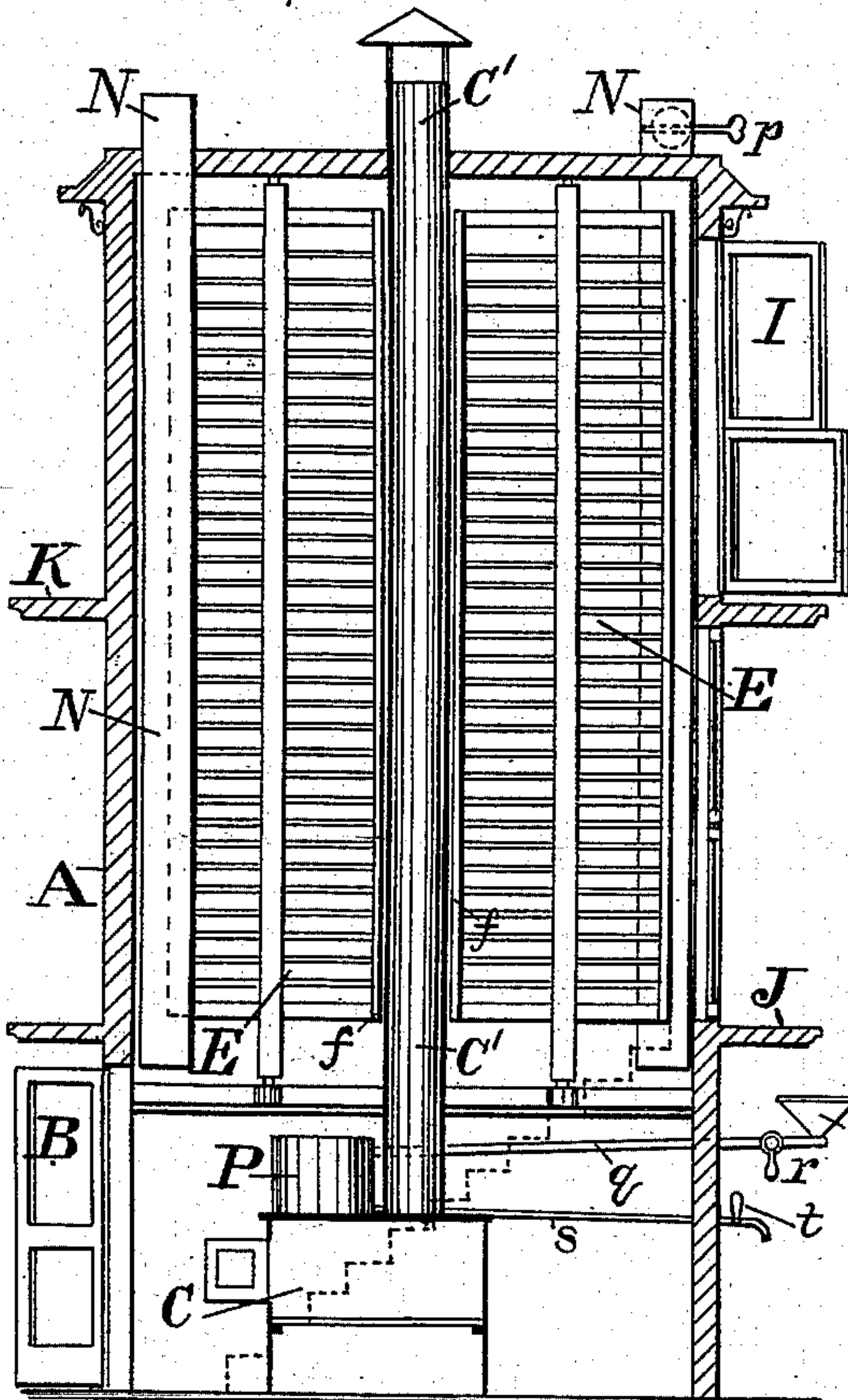


Fig. 1.

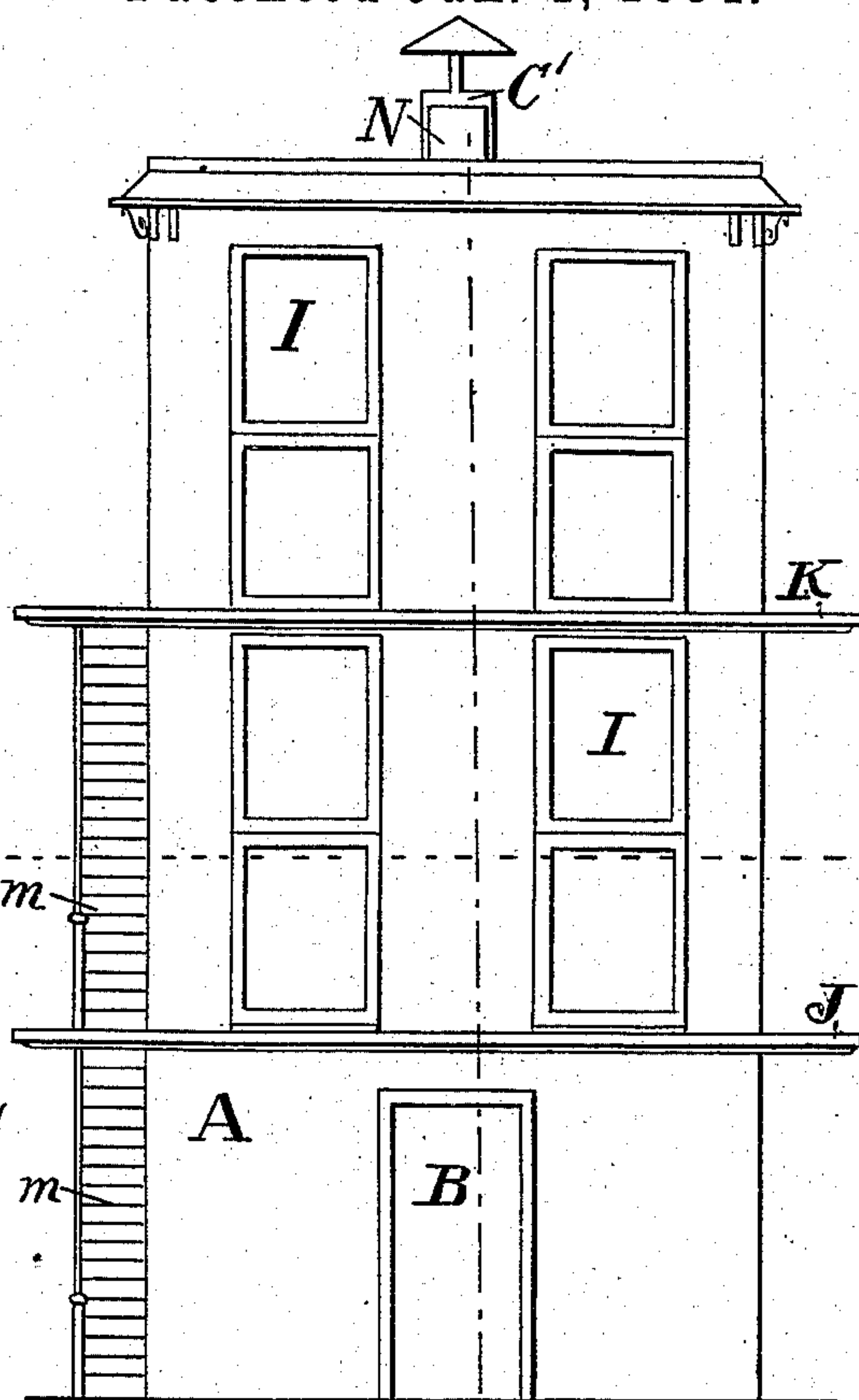


Fig. 2.

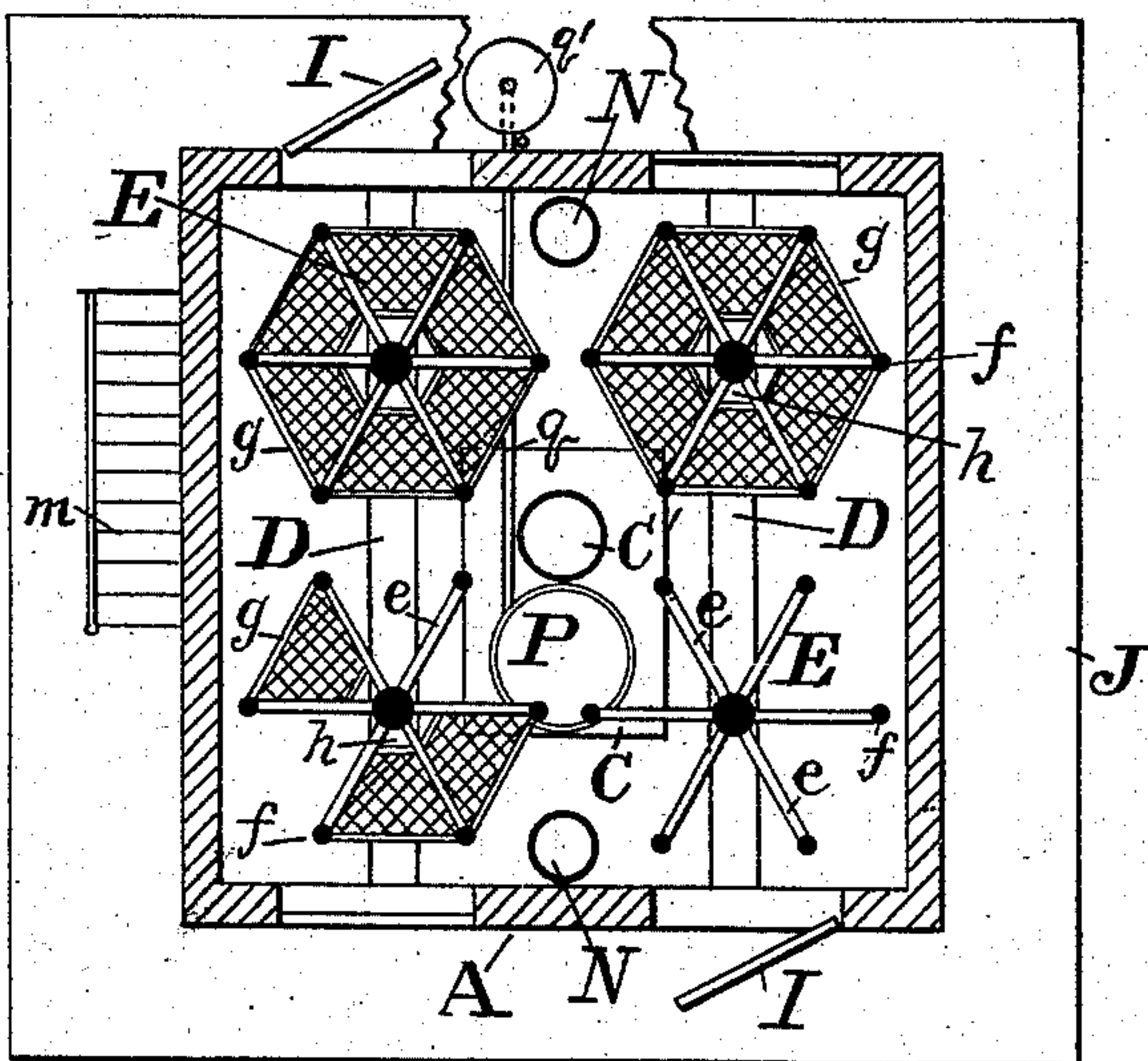


Fig. 3.

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HARRISON FITTS, OF ROLLIN, MICHIGAN.

FRUIT-DRIER.

SPECIFICATION forming part of Letters Patent No. 291,320, dated January 1, 1884.

Application filed May 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, HARRISON FITTS, a citizen of the United States, residing at Rollin, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Fruit-Evaporators; 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.

My invention relates to certain improvements in fruit-evaporators, which are hereinafter first described, and then designated in the claims.

In the drawings hereto annexed, Figure 1 is a vertical section of my apparatus. Fig. 2 is a front elevation of same. Fig. 3 is a plan of a horizontal section on the line *xx* in Fig 2.

The letter A designates the front wall of the kiln, which, considered horizontally, is rectangular in shape and of much greater dimensions vertically than horizontally. The walls form an inclosure which throughout is as near air-tight as practicable. A door, B, through the front wall at its base affords access to the interior, in the center of which, upon the floor, the furnace C is placed. A smoke flue, C', extends from the furnace up the center of the kiln and projects through the roof, which latter is without vents or openings, or, as before stated, is practically air-tight. Two cross-beams, D, extend from side to side of the kiln at an elevation above the furnace and serve to support the reels E, of which there are four in number. These reels rotate on a vertical axis, the smoke-flue passing up the center between them. In practice an apparatus of the magnitude of the one illustrated in the drawings should have reels about sixteen feet high and six feet in diameter. From the central shaft, which constitutes the axis of the reel, arms *e* project radially, there being six arms affixed at the same horizontal plane, which are placed about six inches apart in the vertical direction. The outer end of these arms are attached to and supported by rods *f*, which extend vertically from the top to the bottom of the reel. The arms *e* serve as slides, on which the racks

or fruit-trays *g* are supported. It will be seen that the reels are six-sided, and the sides of the racks or trays from their front edge (which is about three feet long) converge toward their rear. As the rear edge of each of the racks, which is parallel with the front edge, is about sixteen inches long, it will be seen the rear of the rack does not extend to the central shaft of the reels, but is remote therefrom, thus leaving a space, *h*, between the rear edge of each rack and the shaft, whereby a vertical passage or channel is formed by the series of thirty racks, one above another, which channel extends up along the central shaft and permits the heated air and vapors to circulate through the reel. One side of each of these reels is in close proximity to the walls of the kiln when standing in proper position, as shown in Fig. 3, and doors I are made in the walls at these points, through which the racks or trays containing the fruit are inserted in or withdrawn from the reels. The bars or slats of the racks or trays are covered with gauze-netting, which prevents the fruit from falling through. When one of the six sides of a reel has been filled through the open door with racks or trays having the green fruit spread over them, the reel is partly rotated to bring another side before the open door, and the same operation of entering or withdrawing racks is repeated.

It will be seen that three stories are shown in the present example, the second and third of which have galleries or balconies J K, outside and around which the attendants may walk, and which are reached by the stairway *m* on the outside.

Two vapor-flues, N, made of sheet-iron, like ordinary stove-pipe, project through the roof, and are provided with dampers *p*, and extend down through the kiln in a vertical direction to a point below the lower end of the reels. Only the top and bottom end of the vapor-flues are open. These flues are employed mostly when the kiln is full of green fruit, which is very wet, containing a great deal of moisture, so much that when heated it becomes converted into hot steam, which fills the lower part of the kiln below the reels. A considerable part of this vapor is consumed in maintaining combustion in the furnace; but the ex-

cess of vapor which collects in the lower story below the reels finds outlet through the flues N. As the upper part of the vapor-flues becomes very hot, a draft up through them is at once established by opening the dampers *p*.

An open water-vessel, *P*, is placed upon the stove or furnace, and is supplied by a pipe, *q*, which leads from the vessel through the wall of the kiln to the outside, where a funnel, *q'*, is attached. This device serves to supply the vessel with water, while a cock, *r*, may be employed to open and close the pipe. Another pipe, *s*, is attached to the water-vessel and leads therefrom through the wall to the outside, at which point it is lowest, and where a cock, *t*, is attached. This pipe serves to draw off the water.

When first filling the reels with racks, it is necessary to commence at the top, and the water-vessel is employed to produce steam, which ascends to the top of the kiln, and by its presence there prevents the fruit contained on the racks which are first placed in position from scorching. After the upper part of all the reels have been filled with green fruit, the water is drawn off, no more being required while the fruit therein is undergoing evaporation.

In the operation of my apparatus, the heat produced by the furnace rises, and is confined within the kiln, because, as before explained, the kiln is practically an air-tight inclosure, the interior of the kiln, and the upper part in particular, being filled with heated air. The

vapor from the fruit is forced by the heat above to descend as rarefied steam, and as this serves to supply the requisite draft or maintain combustion in the furnace, all necessity for air-openings below is obviated.

The herein-described arrangement of parts is convenient and effective as an evaporator for fruit, and is very economical in operation.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a fruit-evaporator, the combination of an inclosure whose walls and roof are practically air-tight, fruit-trays, a furnace within the said air-tight inclosure, a smoke-flue, *C'*, extending up through the inclosure and projecting from the roof, and one or more vertical vapor-flues, *N*, open only at the top and bottom, and having its lower open end below the fruit-trays and its upper end through the inclosure at the top, as set forth.

2. A fruit-evaporator having rotatable fruit-tray reels, a furnace below the reels, a smoke-flue, *C'*, passing from the furnace to the roof between the reels, and a vapor-flue, *N*, open only at the ends, and having its lower end below the reels and its upper end above the reels, as set forth.

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Witnesses:

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