

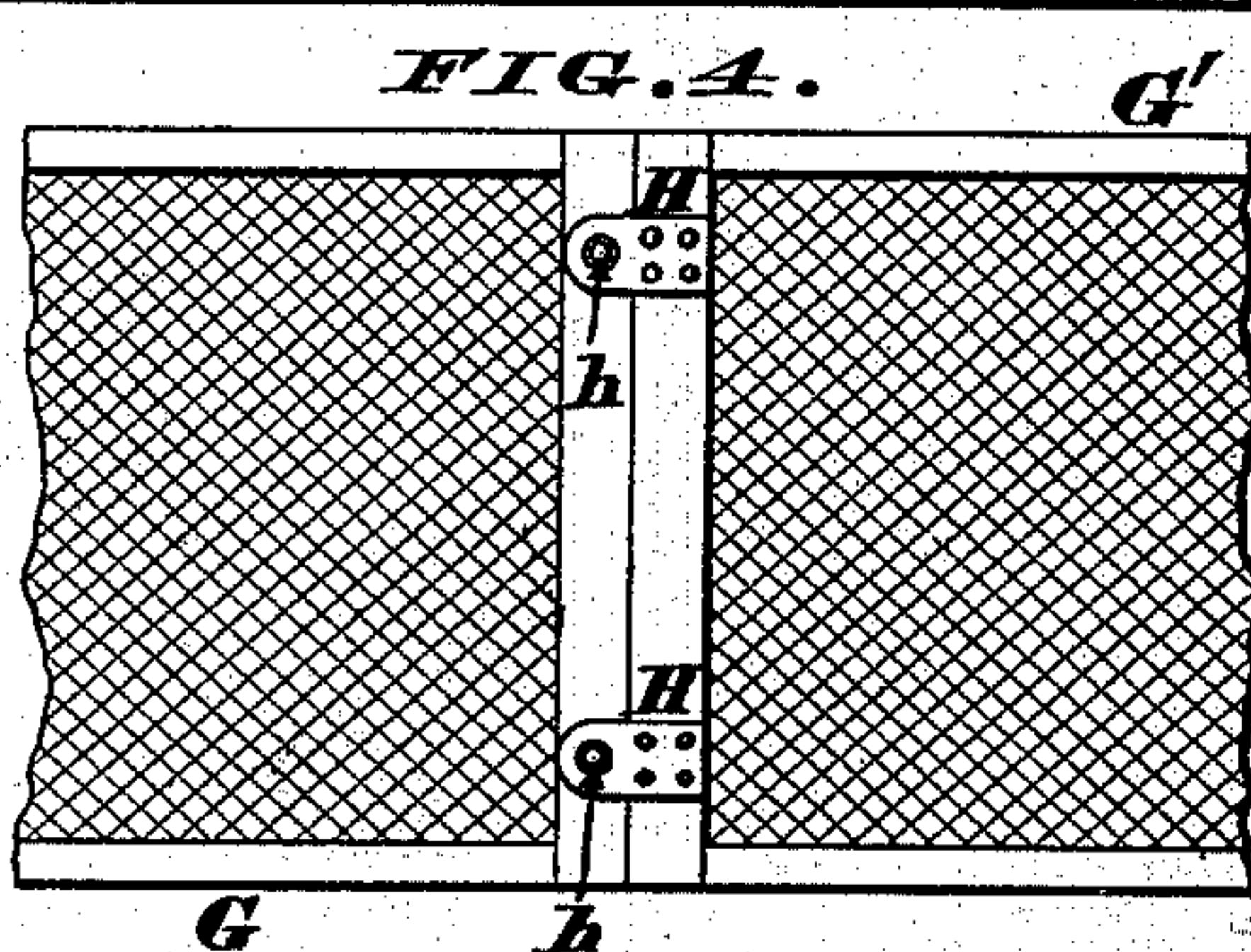
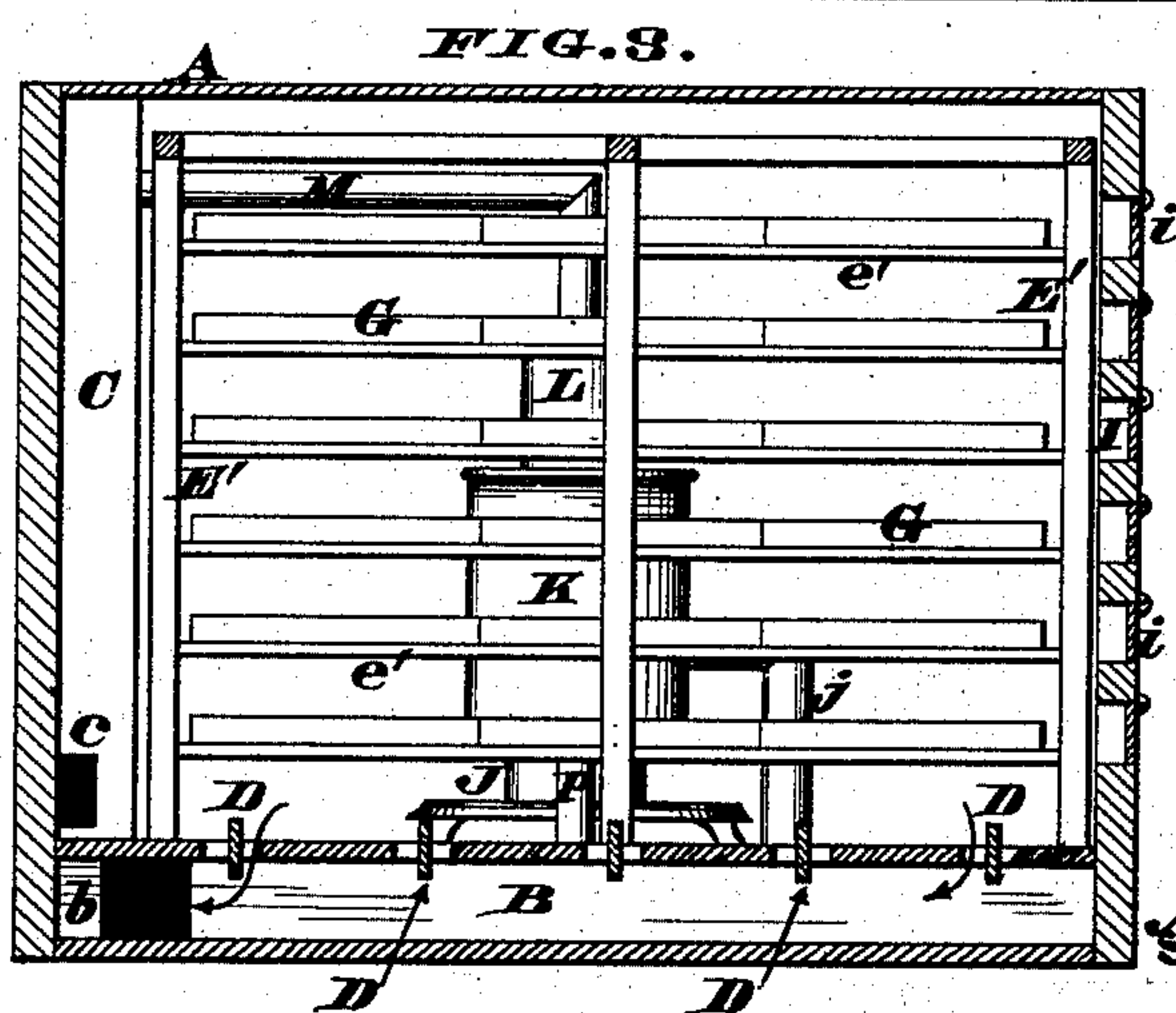
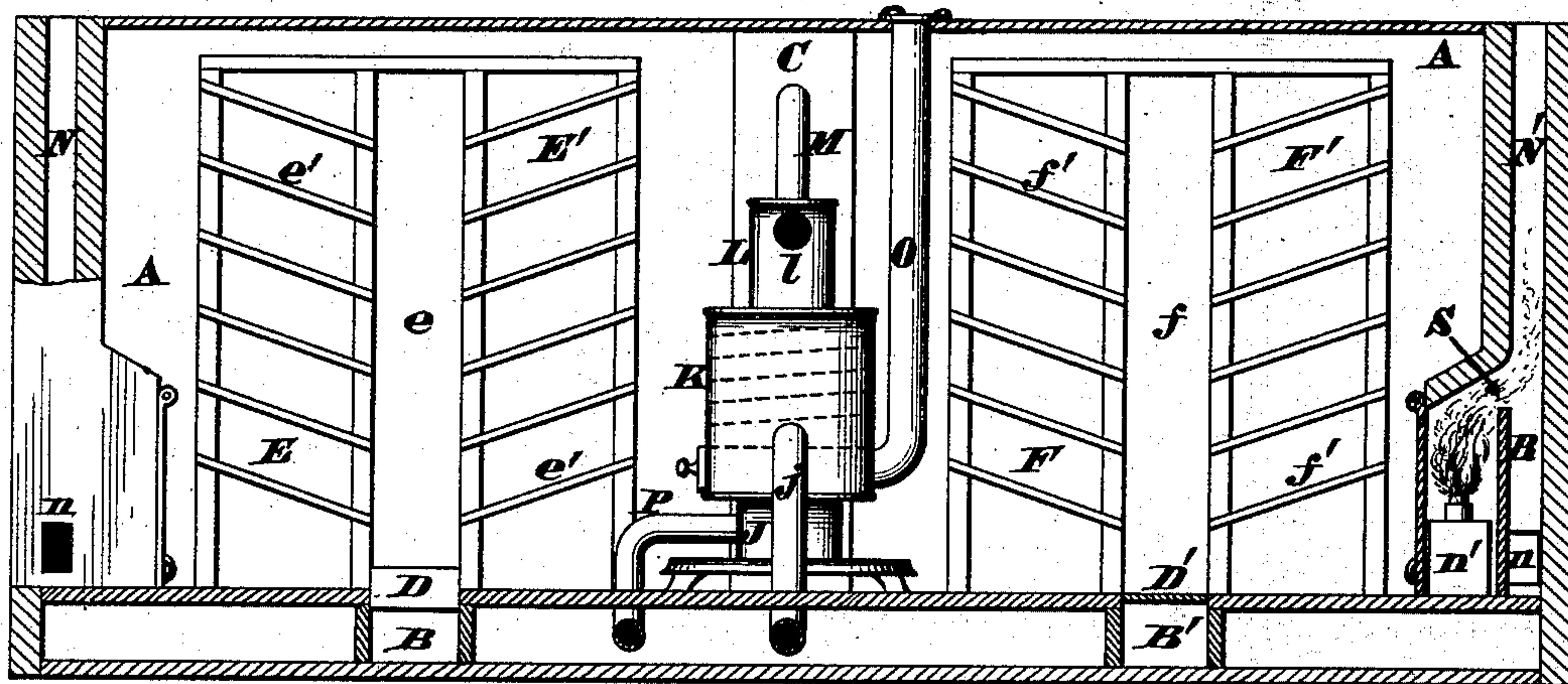
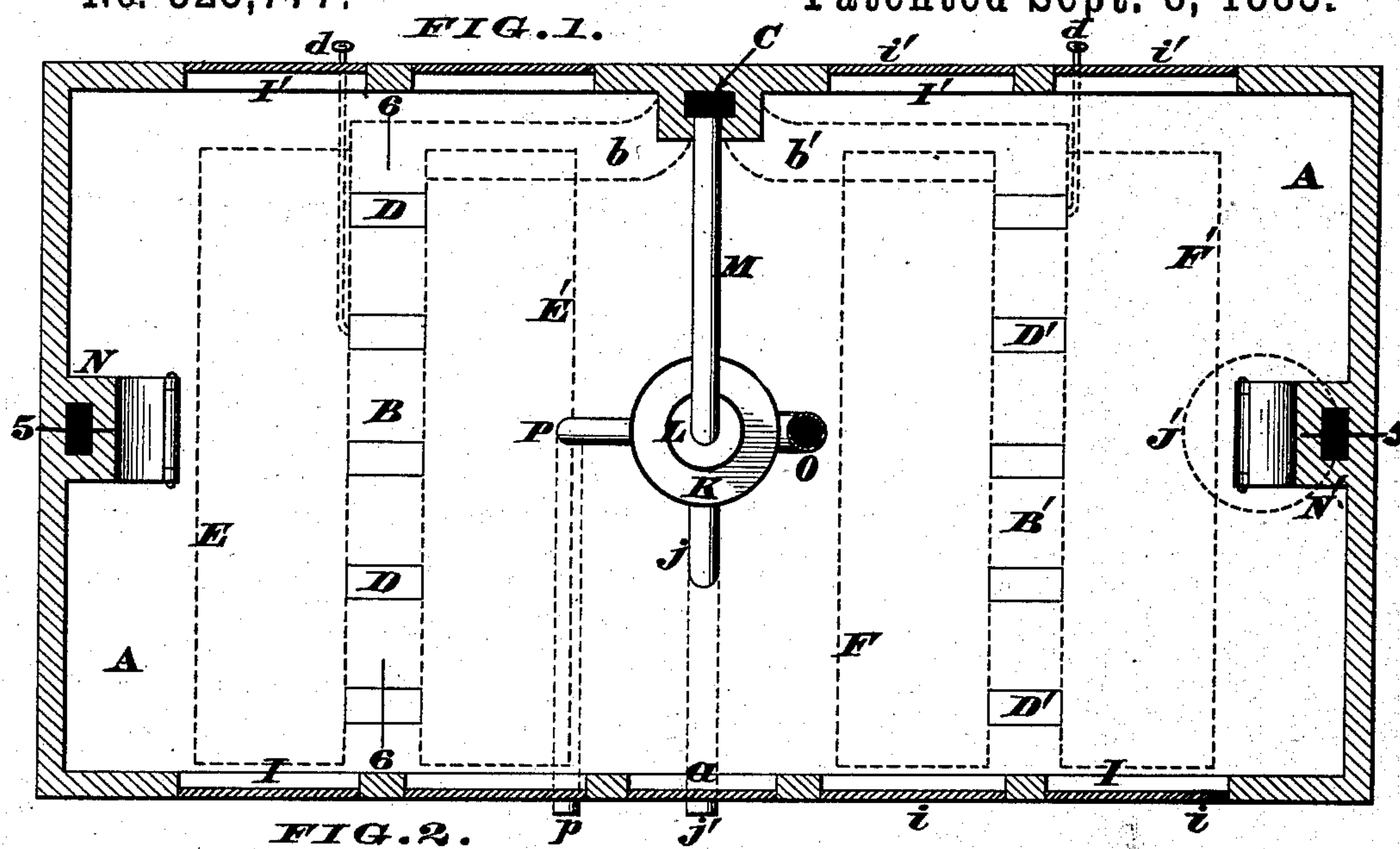
(No Model.)

B. A. WRIGHT.

FRUIT DRIER.

No. 325,777.

Patented Sept. 8, 1885.



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# UNITED STATES PATENT OFFICE.

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## FRUIT-DRIER.

SPECIFICATION forming part of Letters Patent No. 325,777, dated September 8, 1885.

Application filed May 1, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, BUSHNELL A. WRIGHT, a citizen of the United States, residing at Pusadena, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Fruit-Driers, of which the following is a specification, reference being had therein to the accompanying drawings.

My drying apparatus includes a room, apartment, or chamber of any desired capacity, which is so constructed as to be hermetically closed, except at the moment when fruit, vegetables, &c., are either placed in said chamber or removed therefrom, the fruit being deposited on trays that are capable of being readily slid in on suitable racks, the latter being fixtures in the room. Beneath these racks are located valved ducts or channels communicating with a discharge-flue, a forced draft being maintained therein by connecting with said flue the smoke-pipe of the stove used for generating the heat for the drier. This stove, or its equivalent device, is provided either with pipes or passages or other devices that will cause air to pass through or around the fire-chamber thereof, and thereby become highly heated before being discharged into the room, the inflowing current of air traversing a pipe that communicates with the external atmosphere. This heated air dries the fruit, and the moisture and other dense vapors produced thereby fall to the floor and are carried off through the channels previously alluded to, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a plan of the preferred arrangement of my drying-room. Fig. 2 is a vertical section thereof, said section being taken at the line 5 5 of the preceding illustration. Fig. 3 is a transverse section of the same taken at the line 6 6. Fig. 4 is an enlarged plan of a pair of the coupled trays.

The room, apartment, or chamber A, which may be of any desired capacity, is inclosed on all sides by suitable walls or partitions, a door, *a*, being provided to afford entrance into said room. Located near the floor of said room, but preferably beneath said floor, are two channels, B B', closed at one end, while their other ends have branch or lateral

channels, *b b'*, communicating with an exit-flue, C, the latter being located at one side of the chamber A, and having near its lower end an outlet, *c*, (seen in Fig. 3,) which outlet may be provided with an adjustable cover or register. Furthermore, the channels B B' are furnished with valves or registers D D' that may be operated either independently or simultaneously, as desired. Erected over these channels are racks composed of two sections, E E' and F F', each section being separated by an aisle, *e f*, which aisles are about in line with said channels, as seen in Fig. 2. These racks contain cleats or rails *e' f'* for supporting the trays G G', (seen in Fig. 4,) which trays are composed of light frames that are preferably caned in the same manner as a cane-bottomed chair. By this construction of tray a free circulation of warm air through the same is effected, and at the same time there is no danger of the fruit being streaked, as frequently occurs when such trays are made of wire-cloth or perforated metal plates. It is preferred to provide one end of each tray with plates H, suitably pierced to admit small pins or studs *h*, projecting upwardly from the end of the contiguous tray. These trays are inserted in the racks through small openings I, made in the partition-walls of the room, said openings being closed with flaps or shutters *i*. (Seen in Fig. 3.)

Placed in the center of the room is a stove or other appropriate heater, J, surrounded by a drum, K, and extension L, the latter having an outlet, *l*. *j* is a pipe for conducting cold air into the drum K, which pipe leads out to the external atmosphere, as at *j'*.

In order that the stove may be charged without compelling the attendant to enter the highly-heated room, said stove may have a filling-pipe or magazine, O, leading from its fire-pot into an upper room or loft of the apparatus; but where this arrangement is impracticable the stove may be situated at one end of the room, as indicated by the dotted lines J' in Fig. 1, in which event the stove could be fed through a small door or slide in the end wall of the apartment or drying-chamber. In this case the flue N' would be omitted, and the smoke-pipe of the stove would discharge into the flue N at the opposite end of the room.



P is a pipe, through which passes the air necessary to promote combustion in the stove, said pipe having an external outlet, *p*, that may be provided with a register. Drum K should have a helical partition therein, as indicated by the dotted lines, so as to compel the air to describe a devious path before it escapes from said drum into the extension L, the latter being traversed by the smoke-pipe M that leads into the main exit-flue C. By this arrangement the air is highly heated before being discharged into the drier, thereby insuring the utmost economy in the use of the apparatus.

In order to insure a perfect drawing off of the heavy vapors from the bottom of the room, one or more auxiliary exit-flues may be provided, these flues N N' being located at the opposite ends of the drier. Each flue has an opening, *n*, near the floor to admit the vapor, a coal-oil stove or other convenient burner, *n'*, being placed in the bottom of each flue to induce a forced draft up the same. A vertical partition, R, separates the lower portion of the flue into two divisions, in the front one of which the stove or burner *n'* is located, while the opening *n* communicates with the rear division. A passage, S, is left at the upper end of this partition to allow the heat from the stove *n'* to pass up the flue N', which passage should be located about three feet from the floor of the room. This arrangement of partition and passage prevents the air that enters the opening *n* interfering with the proper burning of the stove.

The operation of my drying apparatus is as follows: The trays G are first charged with fruit or vegetables, and are slid in upon the supports *e'* and *f'* of the racks E E' F F', after which the fire is lighted in the stove J, and all the doors of the room are tightly closed, so as to render the apartment practically air-tight. As the cold air enters through the pipe *j*, and circulates through the sinuous passage in drum K and then traverses the extension L, it is evident that the air must become very highly heated before it escapes through the outlet *l* into the room A. Consequently any moisture contained in the fruit is evaporated therefrom in the most expeditious manner, the dense vapors emanating from the material being dragged down into the channels B B' on account of the forced draft in said channels, resulting from their communication with the main exit-flue C. By properly opening or closing the valves D the escape of moisture can be regulated with the utmost nicety, said valves being controlled by rods or handles *d*. (Seen in Fig. 1.) In Fig. 2 the valve D is open, while the valve D' is closed. By closing all the valves on one side of the room and opening those on the opposite side thereof, the escape of moisture will be regulated accordingly, and as the current of hot air will follow the escaping moisture it is evi-

dent this air can thus be forced to circulate through the drying-chamber in any desired manner and with a greater or less volume. Owing to this ability to control the circulation of hot air through any desired part of the apparatus, the fruit is uniformly dried without changing the position of the trays after the latter have been placed in the racks; but if it should be found that the draft of the main flue is not sufficient to produce a perfect ventilation of the room fires may be started in either one or both of the auxiliary exit-flues N N'. As soon as the fruit has been dried the doors *i* on one side of the room are opened and trays containing undried fruit are inserted through said doors, the perforated plates of these new trays being engaged over the pins of the trays in the racks. These new trays are then shoved into the racks, thereby expelling the trays containing the dried fruit and compelling the latter trays to emerge through the doors *i'* on the opposite side of the room; but if the location of the apparatus should be such as to prevent the use of doors on both sides of the drying-room the doors can be applied to only one side thereof, as seen in Fig. 3, in which event it would be necessary to insert the trays and remove them through the same opening, or, at least, through the same openings on one side of the chamber.

It will thus be seen that the provision of the doors *i i'* and the coupling-trays enables the fruit to be introduced into the room without opening the principal door of the latter or compelling the attendant to enter the apartment. Therefore the temperature of the room is never materially reduced; and by employing a suitable burning-fluid or gas in the heater J and stoves *n'* the apparatus can be run for weeks or months without opening the room or lowering the heat of the same. Finally, in the drawings two racks are shown in the drying-room; but it is evident a greater or less number may be employed, according to the capacity of the apartment, and if the latter should be quite large one or more additional stoves may be placed therein.

I claim as my invention—

The combination, in a drying apparatus, of the room A, provided with a series of racks, arranged in pairs, each pair, as E E', F F', having aisles, as *e f*, between them, which aisles communicate with channels B B' by means of the registers D D', said channels being located at the bottom of said aisles and having outlets *b b'* leading into the flue C, to which latter is connected the smoke-pipe of the stove or other heater employed for warming said room, as herein described.

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

BUSHNELL A. WRIGHT.

Witnesses:

ARION E. WILSON,  
C. G. CLARK.