

No. 641,955.

Patented Jan. 23, 1900.

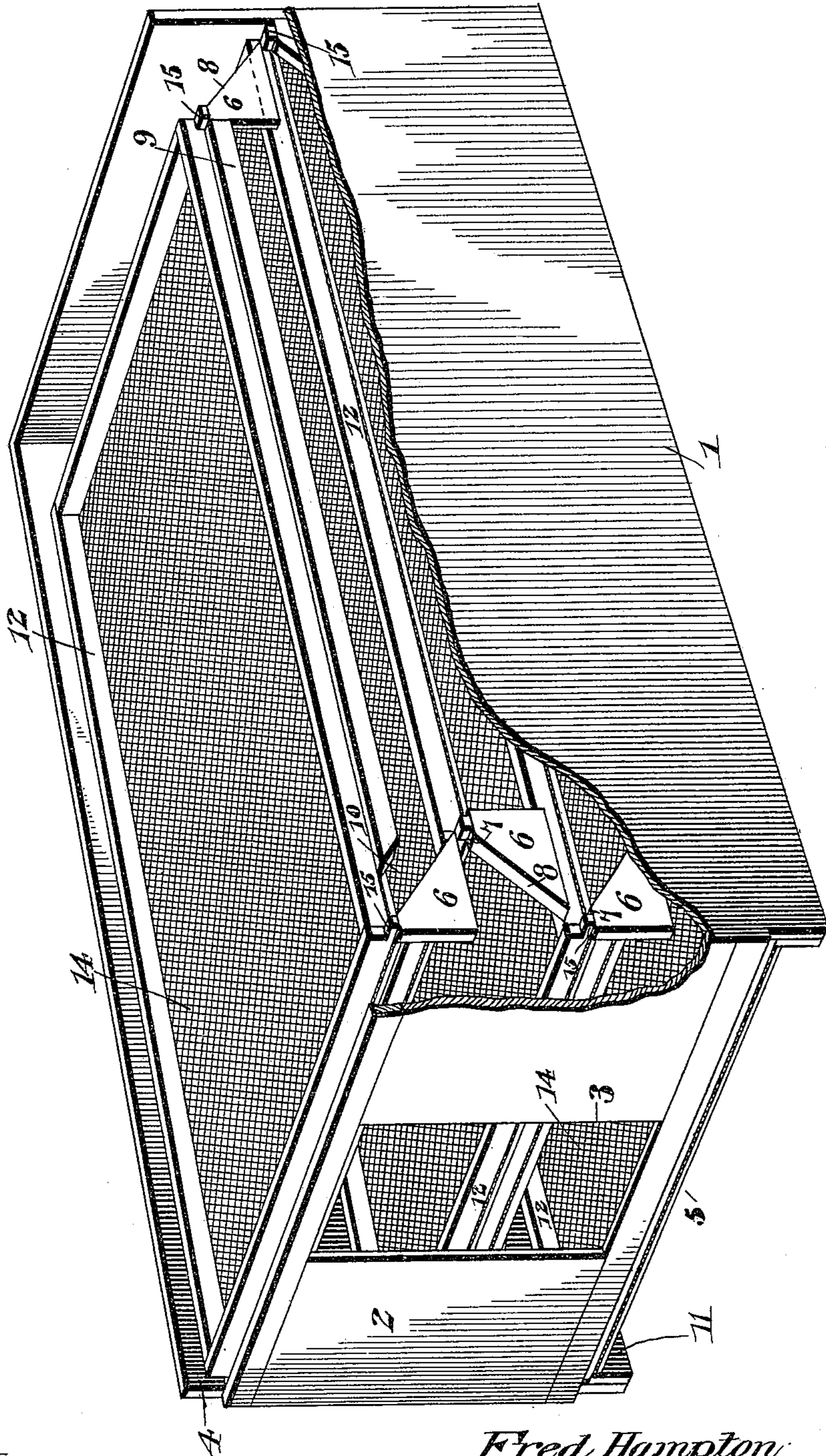
F. HAMPTON.
PRUNE DRIER.

(Application filed July 5, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses

Jas. E. McClathran

Chas. S. Hoyer

By his Attorneys,

Fred Hampton

Inventor

C. A. Snow & Co.

No. 641,955.

Patented Jan. 23, 1900.

F. HAMPTON.
PRUNE DRIER.

(Application filed July 5, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

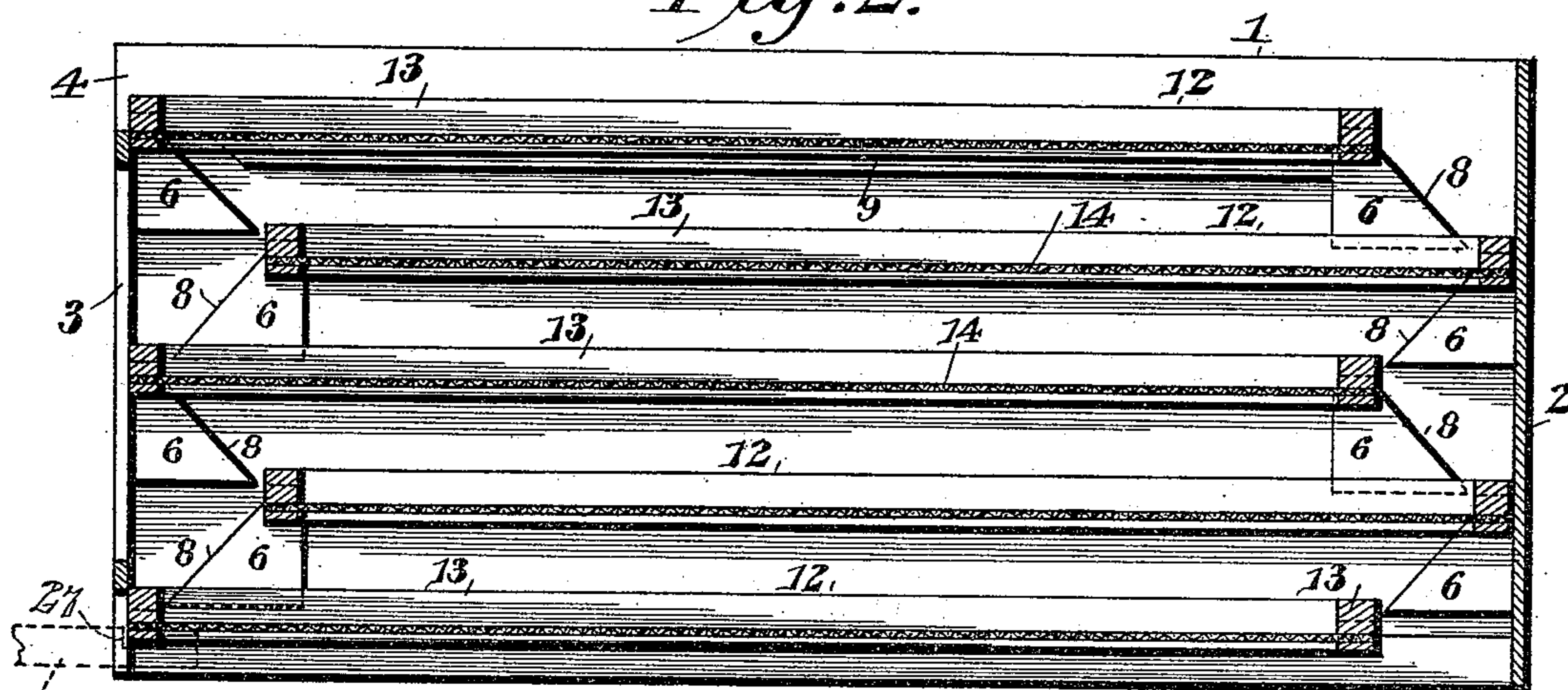


Fig. 3.

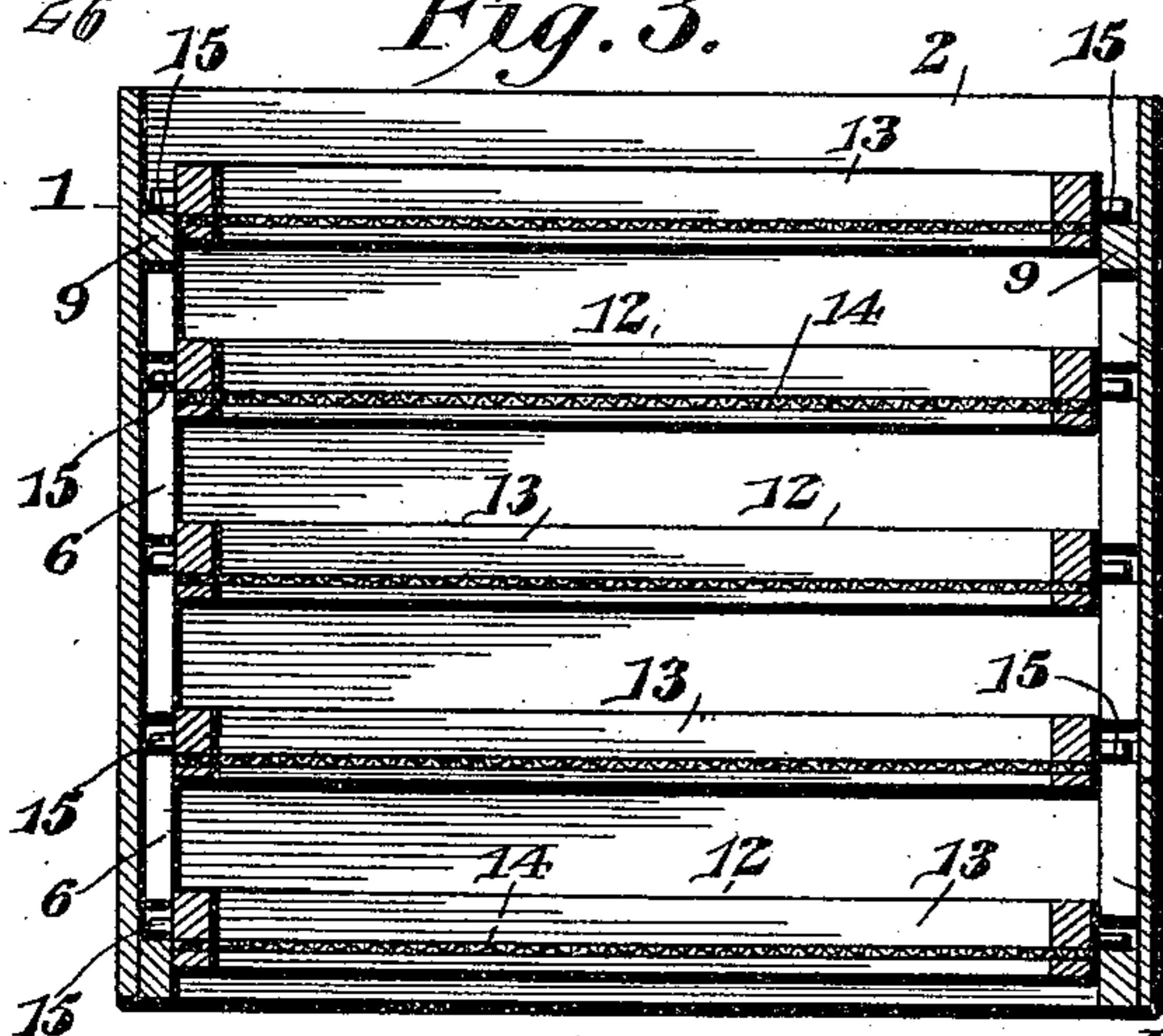


Fig. 4.

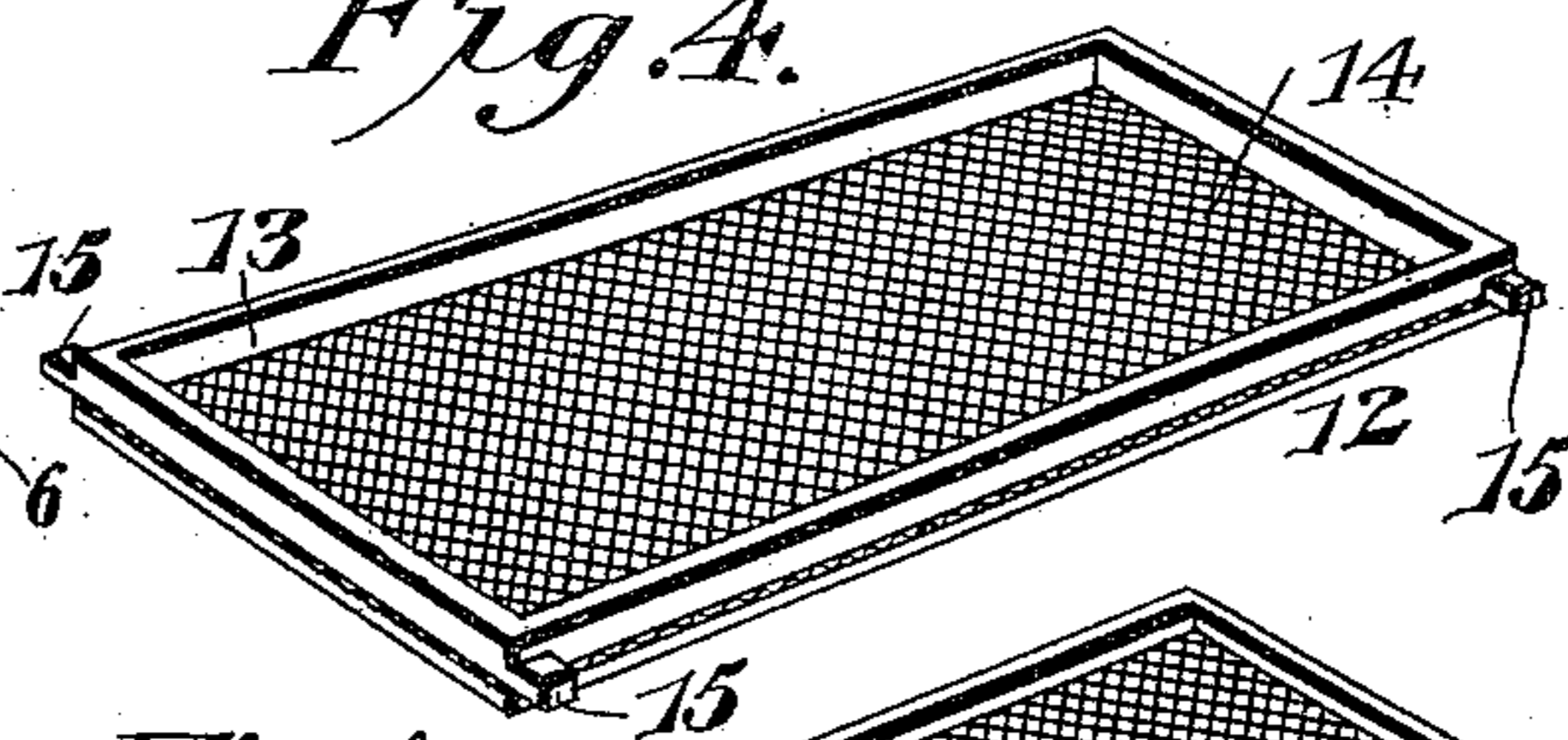


Fig. 7.

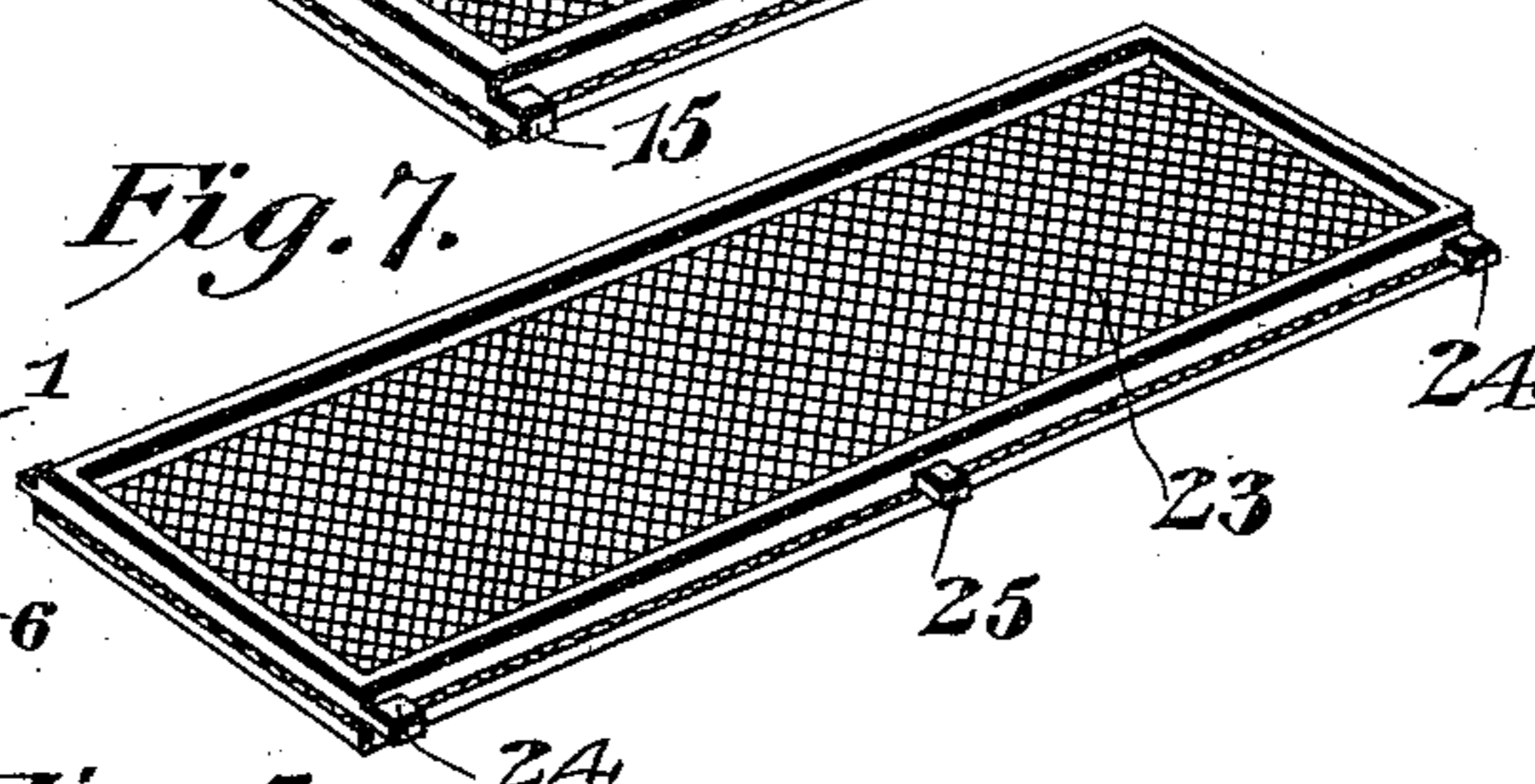


Fig. 5.

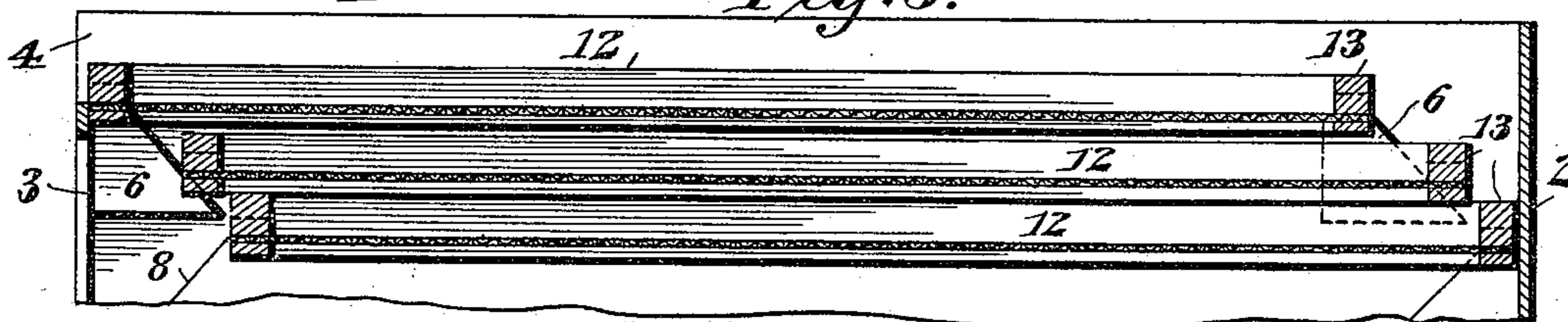
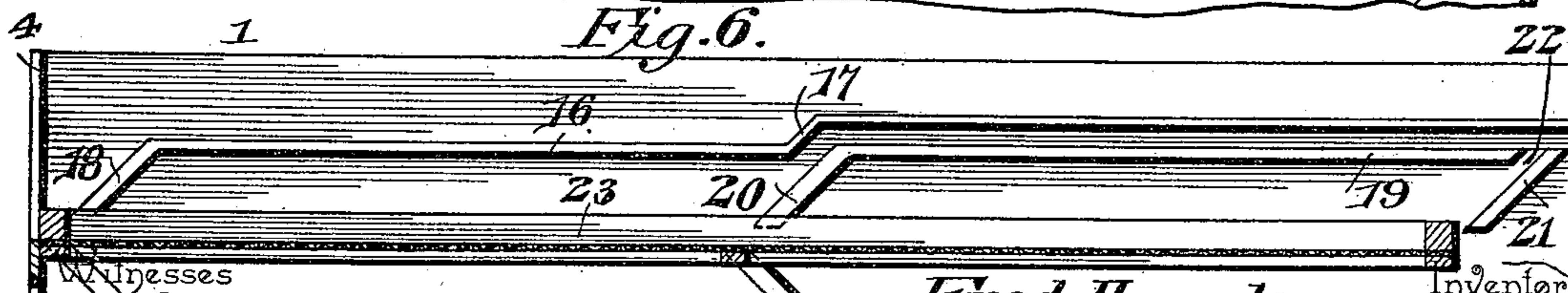


Fig. 6.



Witnesses

Jas. K. McLaughlin

Chas. S. Hoyer.

By His Attorneys,

Fred Hampton

Inventor

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

FRED HAMPTON, OF CANBY, OREGON.

PRUNE-DRIER.

SPECIFICATION forming part of Letters Patent No. 641,955, dated January 23, 1900.

Application filed July 5, 1899. Serial No. 722,870. (No model.)

To all whom it may concern:

Be it known that I, FRED HAMPTON, a citizen of the United States, residing at Canby, in the county of Clackamas and State of Oregon, have invented a new and useful Prune-Drier, of which the following is a specification.

This invention relates to a drier for fruits, grains, and other materials or articles; and the purpose of the same is to provide for the gravitating adjustment of a series of superposed trays to successively bring them under the influence of a gradually-increasing degree of heat and produce a more effective drying or conservation of the materials thereon.

The invention consists, essentially, of a frame having trays supported therein provided with downwardly-inclined faces forming guides and trays supplied with lateral projections to rest upon the supports, the said projections being adapted to register with the guides and permit the descent of the trays by gravity.

The invention further consists of a frame having tray-supports therein provided with downwardly-inclined faces arranged alternately in reverse positions and also constructed with upper seats or rests, said supports being located adjacent the ends of the frame only, and trays supplied with lateral projections to rest upon the supports and register with the guides to permit the descent of the trays by gravity.

The invention further consists of the details of construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of a frame broken away in parts and showing trays arranged therein in superposed relation and supported by the features of the invention. Fig. 2 is a longitudinal vertical section of the parts shown in Fig. 1. Fig. 3 is a transverse vertical section of the frame and series of trays. Fig. 4 is a detail perspective view of one of the trays. Fig. 5 is a longitudinal vertical section of a portion of the frame and trays, showing the latter closely arranged in series. Fig. 6 is a longitudinal vertical section of the frame and a tray of extra length and illustrating the means for supporting a long tray. Fig. 7 is a detail

perspective view of a tray having a length greater than that shown by Fig. 4 and adapted for use with the construction shown by Fig. 6.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The drier, which will be particularly described and illustrated in its preferred form in the accompanying drawings, is especially designed for treating prunes, though it is to be understood that any material can be equally well operated upon, and to accommodate different articles—fruits and grains—it may be necessary at times to vary the mesh or form of the bottom portions of the trays, and, though wire bottoms are preferable for many reasons, yet it is not intended to be understood that the success of the drier depends upon the use of the same. In the use of the improved drier it is preferred that it be located within a heating-chamber supplied with a suitable ventilator and having joists therein to hold the fruit or other material operated upon at a suitable elevation. The chamber is divided into a series of rooms or compartments of narrow elongated form, each of which has a predetermined number of runs of trays. These chambers are also separated by an intervening space, so as to provide working room for attendants or others having control of the trays. This arrangement is not shown, as the effective operation of the drier itself is not absolutely dependent thereon, and in the drawings a supporting-frame and a number of trays are shown in such relation as to disclose the essential features of the invention.

The numeral 1 designates a surrounding frame which is open at the top and bottom and closed at the sides and ends, except at one end 2, which is formed with an opening 3 to give access to the adjacent ends of the trays for operating the latter and may be supplied with a door, if desired, or other analogous form of closure. The upper portion of the end 2 is also cut away to provide an entrance-opening 4 for inserting the trays in the frame, and at the lower part of said end is an exit-opening 5, through which the trays may be withdrawn from the bottom of the

series during the drying operation and when the contents of the lowermost tray shall have been sufficiently treated.

Referring now more particularly to Figs. 1, 2, 3, and 4, the supports 6 are secured against the inner surfaces of the sides and ends of the frame 1 adjacent the meeting corners of the latter, a greater portion of the said supports being held on the sides. These supports 6 are in the form of truncated triangular blocks having seats or rests 7 formed by the planes of truncation of said blocks and also provided with inclined guides 8. These guides 8 are the result of the triangular formation of the supports 6 and are reversely arranged, so that one guide will stand inward and the next outward, and so on through the whole series. On opposite ends of the frame these supports 6 are similarly arranged—that is, the uppermost supports are in parallel relation and have their guides disposed in similar positions. The next pair of supports will be reversed to those above, and the third of the same position as the topmost ones, and so on. On the upper portions of the inner surfaces of the frame 1 guide-rails 9 are secured and have their upper edges in alinement with the seats or rests 7 of the upper supports 6. The rear ends of the said rails 9 are brought to bear closely against the vertical edges of the rear supports 6, so as to make the upper edges of the rails at this point virtually continuous with the seats or rests of the rear supports. The front ends of the said rails terminate in rear of the front upper support 6 and are beveled in planes parallel with the guides 8 of said support, thus forming open guide-passages 10. Under the lowest supports of the series, opposite base-rails 11, are secured to the inner portions of the sides of the frame 1, and the upper edges of these base-rails are located slightly below the upper wall or termination of the exit-opening 5. The distance between the upper edges of these base-rails 11 and the upper wall or limitation of the exit 5 is sufficient to permit the easy movement of a tray outward through the exit-opening, and these base-rails are thereby made to serve as guiding-supports to facilitate the withdrawal of the trays at the lower part of the drier.

The trays 12, as shown by Fig. 4, are each provided with a surrounding frame 13, having in the present instance a woven-wire bottom 14, which may be varied at will. The ends of the trays 12 are supplied by any suitable means with lateral projections 15 of sufficient width to form a stable rest and strong enough to prevent breakage due to the weight of material on the tray. As before indicated, the openings 4 and 5 are just large enough to allow the easy insertion or withdrawal of a single tray, and the transverse extent of the frame 1 is such as to closely confine the tray, but not to such a degree as to obstruct its movement. The frame 1 is longer, however, than the several trays, and

the latter are uniform in length, the rests or seats 7 of the supports 6 at the front and rear being spaced apart a distance equal to the interval between the lateral projections 15 of said tray. Therefore to obtain the required interval between the supports 6 to accommodate the distance between the projections 15 of the tray it is necessary to arrange the opposite front and rear pairs of supports in alinement first against the front end of the frame and at a distance from the rear end of said frame, beginning with the top supports and the succeeding supports in alternate reverse position. Another feature of construction that tends to facilitate the regular gravitating movement of the trays is the prearrangement of the space between the lower horizontal edges of the supports 6 and the planes of the rests or seats 7 of such width as to allow the projections 15 on the trays to have free movement therethrough, and thereby prevent a lateral shifting of the trays, as the parts of the frames of the same above the projections will be brought to bear against the inner surfaces of the supports next above those on which the projections rest.

In Fig. 5 the construction is similar in all respects to that just described, and the purpose of this figure is to show the mode of supporting the trays in a series of three or four, which is regulable by the thickness of the tray-frame, it being understood that trays having shallow frames can be supported in greater number within a certain limitation than those having deeper frames. In this arrangement one tray is supported by another, and in certain small fruits, or even grain, the said close assemblage of the trays might be found to be exceptionally beneficial.

In Fig. 6 the frame is shown arranged for very long trays, and the top rail 16 has an intermediate downwardly-inclined break from the horizontal, as at 17, and at the rear end has an inclined guide 18. Under one part of the rail 16 a shorter guide-rail 19 is fixed and spaced apart from the portion of the said rail 16 above the same a predetermined distance. The rear end of the rail 19 has a downwardly and rearwardly inclined guide 20 in a plane parallel with the guide 18, and at the front is also located a guide-strip 21, vertically arranged and in parallel relation to the guides 18 and 20. A guide-space 22 is formed between the upper end of the guide-strip 21 and the front end of the rail 19, and below the position of the tray, as shown in this figure, the guides are reversely arranged, a rail similar to that designated by 19 being in reverse position at the rear under or below the guide 18 and the adjacent part of the rail 16 connected therewith.

The tray 23, as shown in detail in Fig. 7, has opposite lateral projections 24 and intermediate or central projections 25. The projections 24 of the front end of the tray are received between the front portions of the rails

16 and 19, the intermediate projections 25 being movable over the inclined breakdown 17 and the guide 20. The front and rear projections respectively move through the guide space or opening 22 and over the rear guide 18. This change in the arrangement of the parts can be conveniently used at times; but it will be understood that an intermediate series of supports similar to those heretofore set forth could be applied to the sides of the frame and that such series might be continued indefinitely in the same relationship to establish rests intermediate of the opposite ends of the several trays, and thereby adapt the device to receive trays of considerable length.

The operation of the two different forms of the device is precisely the same, and the features that vary in the separate devices are not of such moment as to materially change the construction. As intimated, the preferred form of the device embodies the supports 6 in their alternately-reverse relation clearly described and shown, and whether a short or a long tray be used it is always necessary to leave a space between either end of the tray and one end of the frame, in accordance with the position of the tray, to provide a heat flue or conduit in the frame with trays containing fruits or other material to be dried. The first tray is placed on the upper opposite series of supports 6, and to guide the rear projections 15 and support the weight of the tray while being properly positioned the rails 9 come into use. The first tray will then occupy the position shown in Fig. 1 and is moved over the seats or rests 7 by being slightly shoved to the rear and descends over the guides 8 until the projections strike upon the seats or rests 7 next below. The operator then reaches the lower tray through the opening 3 and again pulls it forward until it gravitates to the position shown as occupied by the third tray in Fig. 1, and subsequently again pushes the tray rearward until it is seated on the rails 11. The second tray is then inserted in the frame and subjected to a similar operation, whereby it is caused to descend until it occupies the seats or rests on the support 6 next above the rail 11. This operation is carried on until the frame is completely filled, and after the trays are in position on their supports an open space will be alternately formed at opposite ends of the series of trays, thereby producing a tortuous passage for the rise and conveyance of the heated air over, up through, and around the series of trays. The fruit or other material on the lowermost tray will dry more rapidly than on the ones above, and the variation in time required to complete the treatment of the material on the several trays will increase proportionately with the upward disposition of said trays. After the material on the lowermost tray has become sufficiently dry or been influenced by the heat for a proper length of time said tray is withdrawn through

the exit-opening 5 and the next one above is caused to gravitate and replace the removed lower one. All of the trays are then successively lowered and a new tray inserted at the top.

It is essential that the trays be removed from the bottom, as the heat on the uppermost tray is of lower temperature and in a more humid condition, owing to the interposed series of trays below, and as the topmost tray lowers the heat gradually becomes more intense and the moisture less, and upon arriving at the bottom and subjected to the final drying operation the fruit or other material will be in better condition for after usage, as will be apparent to any one skilled in the art.

As a convenient means of removing the trays or reaching the same through the exit or outer opening 5 a puller 26 is shown by dotted lines in Fig. 2 and has a recess 27 in the upper edge thereof to fit over the under portion of the front end rail of the trays. This puller may terminate in a long handle and will be found exceptionally useful for the purpose stated.

Changes in the proportion, size, and minor details other than those illustrated might be made without in the least departing from the spirit or nature of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed is—

1. In a drier, the combination of a casing or frame, tray-supports therein having reversely-arranged inclined faces forming guides and upper horizontal seats or rests, said supports being arranged vertically one above the other, and trays having lateral projections at opposite ends adapted to bear upon the said seats or rests and permit the descent of the trays by gravity by alternate backward and forward movements.

2. In a drier, the combination of a casing or frame, tray-supports therein having downwardly-inclined faces forming guides and upper seats or rests, the said inclined faces being in alternate reverse arrangement, trays having lateral projections to bear upon the seats or rests and move over the inclined faces of the supports, and guide-rails on the inner upper portions of the said frame or casing having their front ends terminating short of the upper tray-support.

3. In a drier, the combination of a frame or casing, a series of supports having inclined faces in alternate reverse arrangement and upper seats or rests, and trays having lateral projections adapted to gravitate on the said supports and be held thereby to form alternate end hot-air passages.

4. In a drier, the combination of a casing or frame, tray-supports therein having downwardly-inclined faces in alternate reverse arrangement to form guides and also provided with upper horizontal seats or rests, and trays of materially less length than the casing and

having lateral projections adapted to bear upon the said seats or rests and movable over the inclined faces, the said seats or rests being alternately arranged under the terminations of the inclined faces above to locate the trays at a distance from the opposite ends of the casing in alternation.

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

FRED HAMPTON.

Witnesses:

GEORGE FLETCHER,
F. A. SLIEGHT.