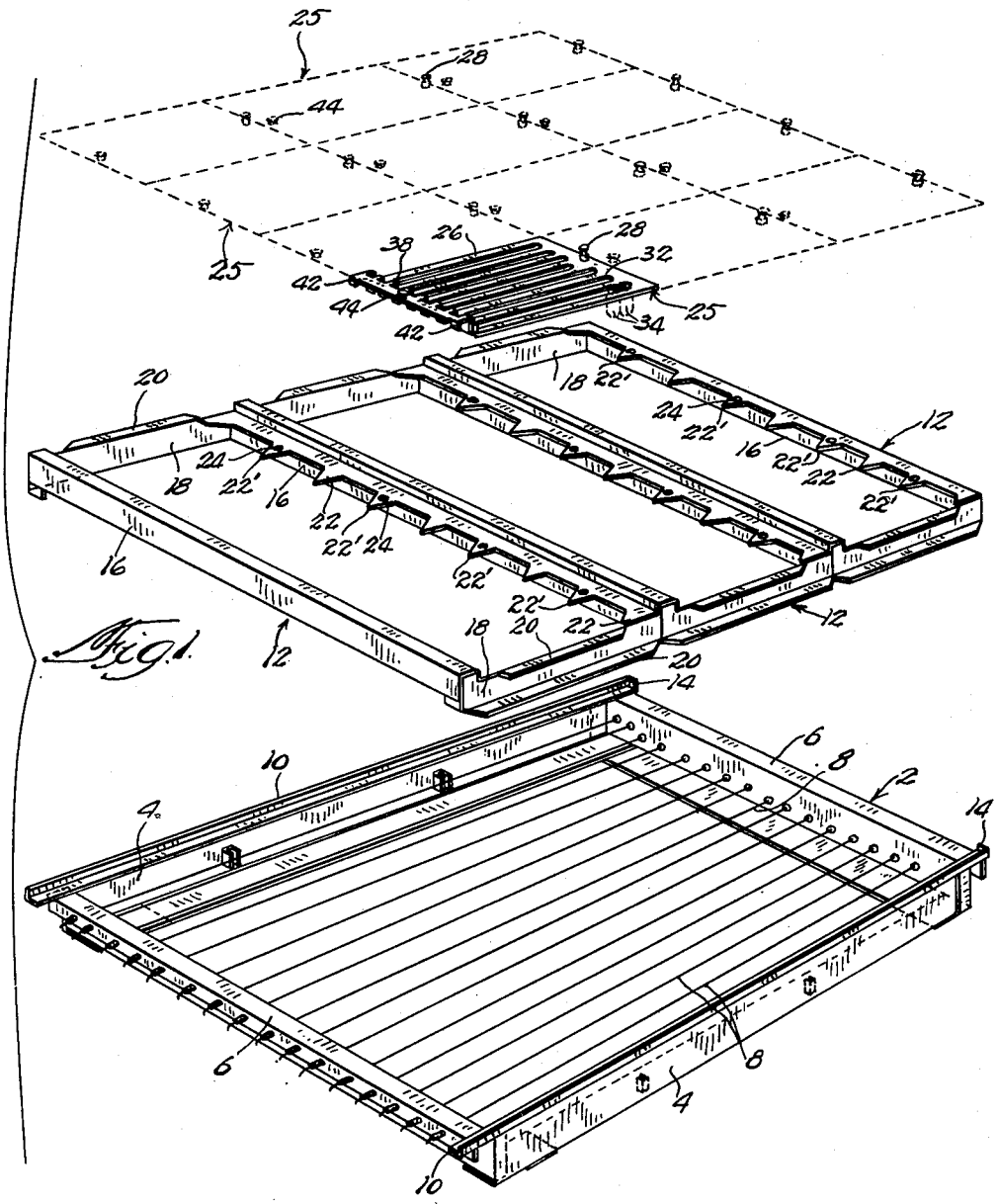
June 9, 1953 D. M. BROWN 2,641,368

VIAL RACK

Filed March 29, 1951 2 Sheets-Sheet 1



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VIAL RACK

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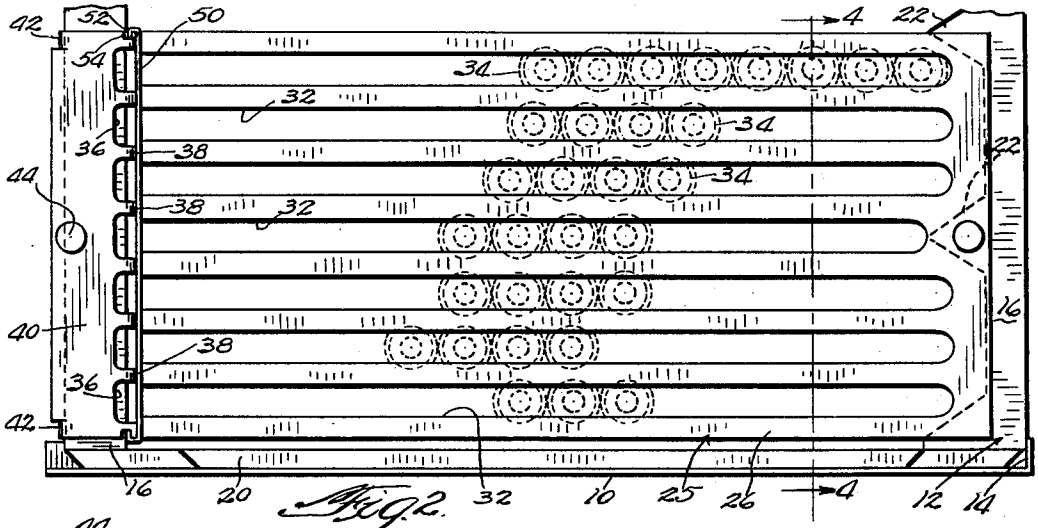


Fig. 2.

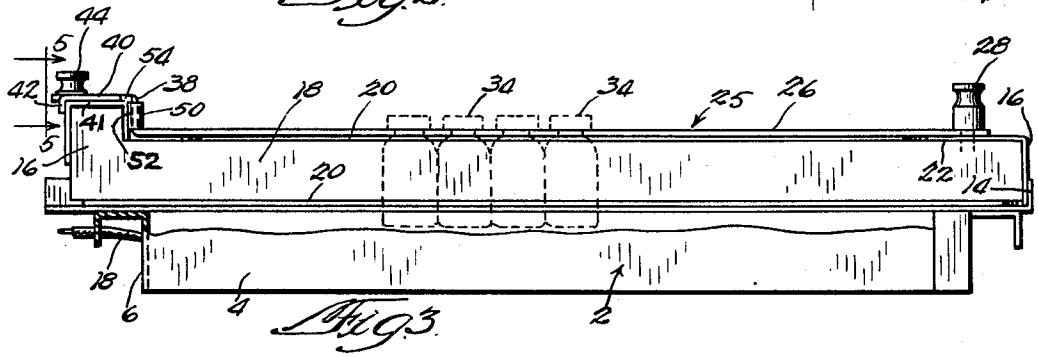


Fig. 3.

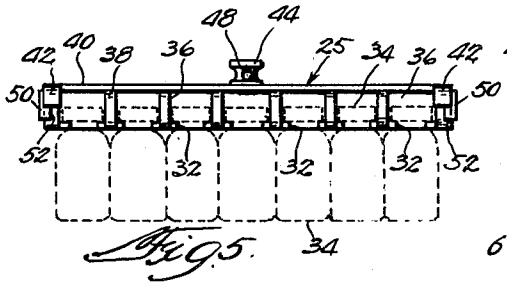


Fig. 5.

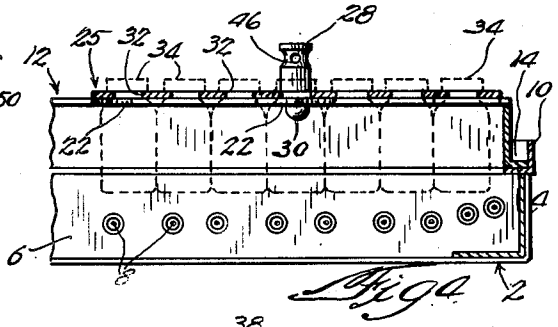


Fig. 4.

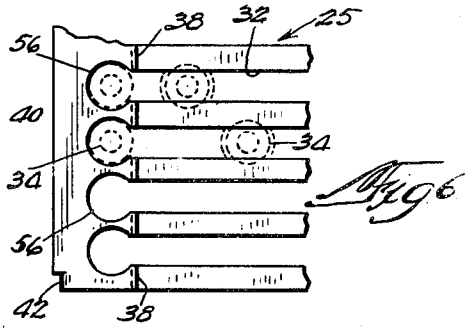


Fig. 6.

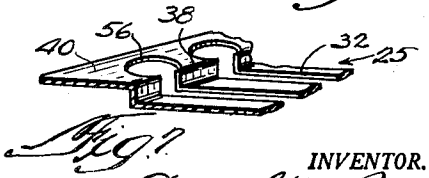


Fig. 7.

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VIAL RACK

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7 Claims. (Cl. 211—74)

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This invention relates to vial trays or racks, and more particularly to a novel device adapted to support the necks of vials or other containers for the purpose of drying or otherwise treating materials contained therein.

A primary object of the invention is to devise a novel tray device to facilitate heating of the containers from the bottom thereof.

Another object of the invention is to provide a tray device capable of supporting a maximum number of containers within a heating zone.

A further object of the invention is to facilitate handling of the containers during loading and unloading of the device.

A more specific object of the invention is to devise a novel tray or rack having open ended slots, through which the necks of the containers pass as they are loaded and unloaded.

Still another object of the invention is to devise novel retainer means preventing accidental dislodgment of the container necks from the open ends of the slots. In one embodiment of the invention, the retainer means are provided by a novel keyhole construction of the slots at their open ends, and in another embodiment of the device the retainer means are removably mounted on the tray at the open end of the slots.

A further object of the invention is to devise a novel master tray or frame, adapted to carry a plurality of container supporting trays, removably mounted in such manner as to accommodate a maximum number of containers within the master tray.

The foregoing and other objects and advantages of the invention will become apparent from a consideration of the following specification and the accompanying drawings, wherein:

Fig. 1 is an exploded perspective view of a composite tray device embodying the invention;

Fig. 2 is a fragmentary top plan view of a master tray, with one of the container-supporting trays mounted thereon;

Fig. 3 is a side elevational view of the structure shown in Fig. 2, with the master tray partly broken away;

Fig. 4 is a sectional view on the line 4—4 of Fig. 2;

Fig. 5 is an end elevational view of the container-supporting tray on the line 5—5 of Fig. 3;

Fig. 6 is a fragmentary top plan view of a modified container supporting tray; and

Fig. 7 is a fragmentary perspective view of the tray shown in Fig. 6.

Describing the invention in detail and referring first to Fig. 1, the novel device comprises a substantially rectangular support frame, generally designated 2, and comprising side panels 4 and end panels 6, the end panels being perforated for the reception of wiring 8 adapted to afford a source of infra-red rays for a purpose hereinafter described.

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The support frame 2 comprises a pair of L-section side rails 10, adapted to afford slidable support for a plurality of master trays or frames, generally designated 12, the ends of the rails 10 being provided with convenient stop flanges 14, whereby the master trays 12 may be seated on the rails 10 at the left end of the support frame 2, as seen in Fig. 1, and may be pushed along the rails 10 until the maximum number of master trays 12 have been assembled on top of the support frame 2. It will be understood that any desired number of master trays 12 may be utilized, three being illustrated in the embodiment shown in Fig. 1.

Each master tray 12 is a substantially rectangular frame-like structure having side panels or walls 16 and end panels or walls 18 with outturned flanges 20. One of the side walls 16 of each master tray 12 is provided with a plurality of generally triangular, substantially horizontal projections 22, tapering inwardly toward the opposite side rail 16, alternate projections 22' being provided with perforations or openings 24 for the reception of associated positioning means on the container-supporting trays, as hereinafter described in detail. It may be noted that the projections 22' at the ends of the master tray 12 extend between the side and end panels 16 and 18 thereof, and the top surface area of each end projection 22 is approximately one-half that of each intermediate projection, inasmuch as the end projections 22 each support one corner of a single separable tray, generally designated 25 as best seen in Fig. 2.

Each tray 25 comprises an elongated, substantially flat member 26, approximately rectangular in form and seated at one end thereof on the related projections 22. The tray 25 is preferably provided with a stud 28 having a pin or dowel 30, snugly fitted within the complementary opening 24 of the projection 22' which supports said tray 25 along the longitudinal centerline thereof, as shown in Fig. 2.

The member 26 comprises a plurality of elongated slots 32, extending lengthwise thereof and closed at the end of the member 26, which is supported by the projections 22, the center slot 32, as best seen in Fig. 2, terminating inwardly

of the remaining slots 32 which extend between the projections 22 to utilize the maximum available space for the support of containers 34. The necks of containers 34 snugly fit within the slots 32, whereby the containers 34 are heated at the lower extremities thereof by infra-red rays emanating from the wiring 8, as will best be understood by a consideration of Fig. 4.

The ends of the slots 32, remote from the projections 22, are open as best seen in Fig. 5, and merge with enlarged openings 36 in a flange 38 upstanding from the end of the member 26, whereby said flange 38 is divided into a plurality of straps, as best seen in Fig. 5, defining the before-mentioned openings 36 therebetween to accommodate loading of the containers 34 into the slots 32 and removal of the containers from said slots through the openings 36 which form enlarged extensions of the slots 32.

The flange 38 is provided with a reflanged portion 40, the ends of which are provided with reentrant flanges or lips 42 whereby the flanges 38 and lips 42 define a jaw which snugly embraces one side panel 16 of the master tray 12, as best seen in Fig. 3, the reflanged portion 40 having a bottom seat 41 supported by the panel 16 and approximately parallel to the bottom surface of the member 26 which is seated, as above described, on the projection 22. The reflanged portion 40 is preferably provided with a stud 44 and, as best seen in Figs. 4 and 5, the studs 28 and 44 are preferably provided with openings 46 and 48, respectively, for the reception of any suitable means, such as a wire handle (not shown) for convenient handling of the tray 25.

Accidental dislodgement of the containers 34 by movement thereof lengthwise of the slots 32 is prevented by retainer means illustrated in Fig. 2 in the form of a U-shaped plate 50 having flanges 52 engageable with the flange 38, the flanges 52 being movable through slots or notches 54 in the reflanged portion 40 during assembly or disassembly of the retainer plate 50 with the tray 25.

As will be best understood by a consideration of Fig. 2 each tray 25 is supported at its center line by a perforated projection 22' which is engaged with the dowel 30 of the tray 25 to afford convenient positioning means therefor, and the lateral margins of the tray 25 are supported by the unperforated projections 22 whereby adjacent trays 25 are supported beneath their mutually facing edges by a common projection 22. It will be understood that this arrangement accommodates positioning of the trays 25 closely adjacent each other to utilize the maximum available space within the master frame or tray 12.

Furthermore, the arrangement of slots 32 within the trays 25, as above described, utilizes the maximum available space thereof for supporting the containers 34. It may also be noted that the open ended slots 32 facilitate loading of the containers 34 from an associated rack (not shown), whereby the slots 32 may be quickly filled with containers to accomplish rapid loading of the device.

A modification of the separable tray 25 is illustrated in Figs. 6 and 7 wherein parts corresponding to the previously described embodiment are identified by corresponding numerals. It will be understood that the tray illustrated in Figs. 6 and 7 is similar to that shown in Figs. 1 to 4, except that the upstanding flange 38 is somewhat shorter and the slot extensions therethrough are substantially the same width as the slots 32, whereby accidental disassembly of the containers 34 by movement thereof endwise of the slots 32 toward the flange 38 is prevented by abutment of the containers 34 therewith. Entrance and removal of the containers 34 with respect to the slots 32 is accommodated by enlarged openings 56 in the reflanged portion 40, said openings 54 merging with the slot extensions through the flange 38 to afford a keyhole slot configuration, whereby the containers 34 may be tilted into the openings 56 to accommodate loading and unloading of the containers 34 with respect to the slots 32.

Changes may be made in form and substance without departing from the spirit of the invention or sacrificing any of the advantages and the right is hereby reserved to make all changes which fairly fall within the scope of the following claims.

What is claimed as new and desired to be secured by Letters Patent of the United States is as follows:

1. A device of the class described comprising a support structure, a master frame removably supported by said structure, said frame comprising support means at one side thereof, and said frame comprising a plurality of spaced projections at the opposite side thereof tapering inwardly toward said support means, and a plurality of trays each having an upstanding flange at one end thereof with a reflanged portion supported by said support means, each of said trays at its opposite end being supported by a plurality of said projections, adjoining trays being supported by a common projection, and means on said trays for supporting associated containers.

2. A device of the class described comprising a support structure, a master frame removably supported by said structure above said means, said frame comprising support means at one side thereof, and said frame comprising a plurality of spaced projections at the opposite side thereof tapering inwardly toward said support means, a plurality of trays in said frame, each having one end thereof carried by said support means and having the opposite end thereof seated on a plurality of said projections, means depending from each tray and snugly fitted with a complementary opening in one of said projections for positioning the tray relative thereto, adjoining trays being seated on a common projection, and means on each tray for supporting a plurality of associated containers.

3. A device of the class described comprising a support structure, a master frame separable with respect to said structure and supported thereby, said frame comprising support means at one side thereof and said frame comprising a plurality of spaced projections at the opposite side thereof tapering inwardly toward said support means, and a plurality of trays in said frame, each of said trays being supported at one end thereof by said support means and being seated at the opposite end thereof on a plurality of said projections, adjoining trays being seated on a common projection, and a plurality of slots in the bottom of each tray for supporting associated containers, certain of said slots extending between the projections, and other of said slots terminating inwardly of the projections.

4. A device of the class described comprising a support structure, a plurality of master frames separable from said structure and supported at their ends thereby, a plurality of separable trays removably supported at their ends by each master

frame at opposite sides thereof, and means on said separable trays at the bottom thereof for supporting associated containers.

5. A device of the class described comprising a support structure, a separable tray supported at its ends thereby, a plurality of slots in the bottom of said tray closed at one end thereof and open at the other end thereof for reception and removal of associated containers, and means for preventing accidental disassembly of said containers by movement thereof endwise of said slots.

6. A tray of the class described comprising a support structure with a plurality of slots extending lengthwise thereof, said slots being closed at corresponding ends thereof and being open at opposite corresponding ends thereof for the reception of associated containers, and means for preventing accidental dislodgment of said containers by movement lengthwise of said slots toward their open ends, said means being characterized by a member extending transversely of the support member across all of the slots and removably attached to the said support member.

7. A tray of the class described comprising an elongated flat member, a stud secured to said member at one end thereof and comprising a dowel depending from said member for positioning the tray with respect to an associated support

structure, an upstanding flange on said member at the opposite end thereof, said flange having a reflanged portion at its upper end, a reentrant flange on said reflanged portion, said flanges defining a jaw for embracing a portion of said structure, and a stud carried by said reflanged portion and projecting upwardly therefrom, a plurality of slots through said member extending lengthwise thereof and closed at said one end thereof, the opposite ends of said slots extending through the first-mentioned flange.

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