

United States Patent

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[56]

References Cited

UNITED STATES PATENTS

1,330,946	2/1920	Locke, Jr.....	206/45.25
1,379,612	5/1921	Baver	248/459
2,149,978	3/1939	Noel	248/459
2,493,134	1/1950	Gruden	248/459 X
2,783,013	2/1957	Williamson.....	248/459 X
2,829,767	4/1958	Scripture	206/73
3,300,055	1/1967	Rohr	211/74

FOREIGN PATENTS

754,863	8/1956	Great Britain.....	206/45.24
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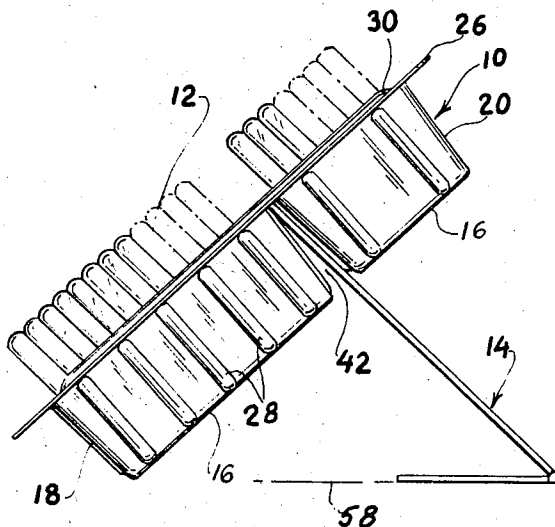
[54] EASEL TRAY FOR TEST TUBES
5 Claims, 4 Drawing Figs.

[52] U.S. Cl..... 211/74,
206/45 24 248/459

[51] **Int. Cl.**.....**B65d 81/36,**
B011 9/06, A47f 7/03

[50] **Field of Search**..... 211/74, 72,
2; 248/152, 148, 459; 206/45, 24

ABSTRACT: A multicompartimented test tube with separable easel support having a hollow partition between tray compartments. The partition is open at the bottom of the tray to form a socket which receives an easel support.



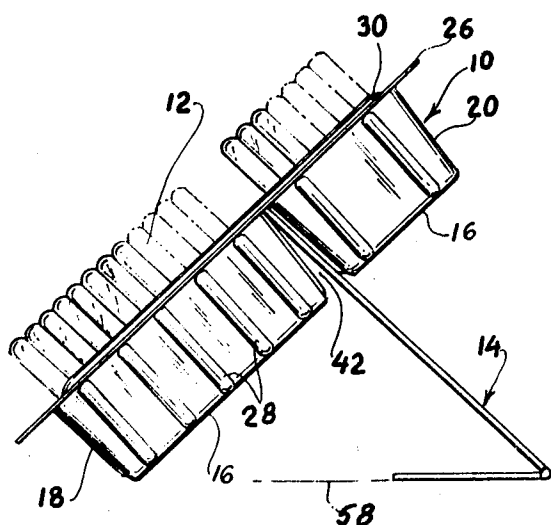


Fig. 1

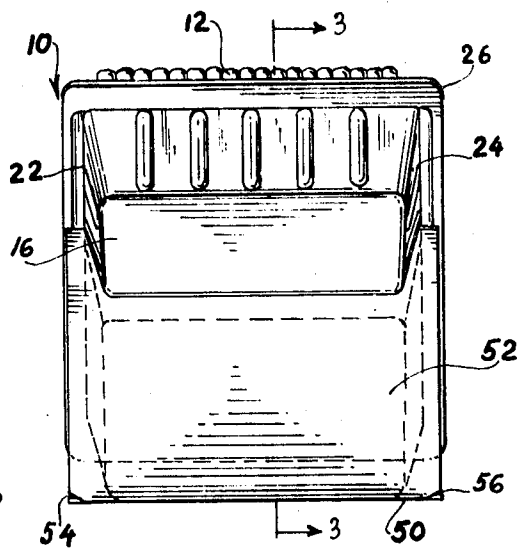


Fig. 2

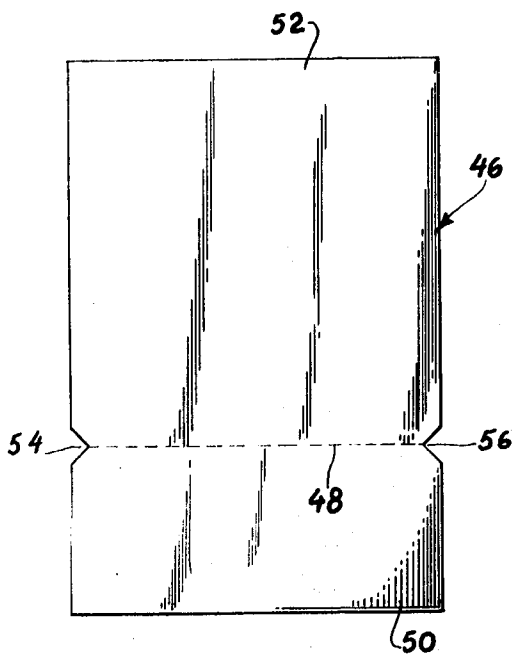


Fig. 4

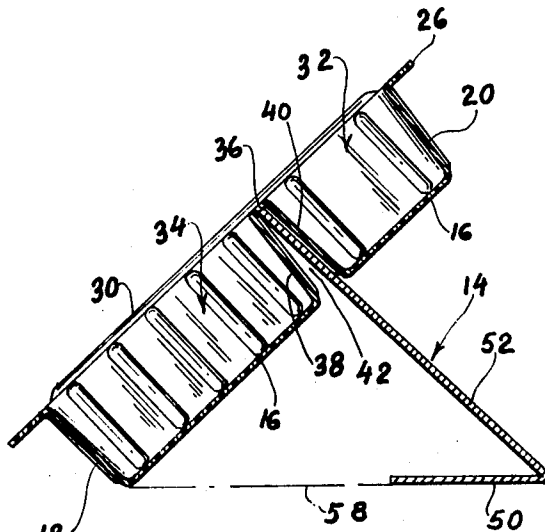


Fig. 3

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EASEL TRAY FOR TEST TUBES

BACKGROUND OF THE INVENTION

Field of the Invention: This invention relates to test tube trays which perform two functions: one is to package the test tubes and the other is to support them for use. The invention is applicable to chemical, pharmaceutical, biological, bacteriological and other laboratories and it may also have application to other fields entirely remote from such laboratories.

Easel-supported display boxes are well known to the art and it is believed that they have particular application to boxes containing candy bars and other articles which are displayed for sale on store counters and shelves. Similarly, easel supports are used in many noncommercial applications, for example, photographs, paintings, calendars and many other articles which are supported by easels in the home.

However, in none of the prior art known to the present inventors is the present combination of elements shown or used. A test tube tray which also serves to package the test tubes for sale, shipment and storage, and which is provided with easel support means so that it may be supported in convenient angular position for laboratory and other use, is not known to the prior art. The common and usual method of packaging test tubes is in boxes which may double as trays. In such case, the test tube container supports the test tubes in either vertical or horizontal position, neither of which is convenient for use. When the test tubes are supported in vertical position, removal of some of them will cause others to fall over and eventually, as the process of removal continues, the remaining test tubes will be found in scrambled random positions on the floor of the container and across each other. When the test tubes are supported in horizontal positions, removal of the uppermost test tubes to frictionally dislodge the lower test tubes in contact therewith. Accordingly, great care must be taken to prevent the remaining test tubes, or any of them, from dropping out of the container.

SUMMARY OF THE INVENTION

The principal object of this invention is the provision of a tray for test tubes and other articles, which tray is used as a packaging container for sale, shipment and storage of the test tubes, and which is also used in the manner of a test tube supporting rack or tray on laboratory tables and wherever else test tubes are conventionally used. To support the test tubes for convenient removal, the tray is tilted at a convenient angle and it is supported in such angular position by means of a removable easel support.

When a test tube tray is angularly supported in the manner above described, the test tubes will rest securely against each other, their open upper ends resting against the tilted floor of the tray. Removal of the upper tubes will not disturb those below them. The upper test tubes do not support the lower test tubes and consequently no matter how many test tubes are removed from a given tray, those that remain will retain their original positions.

An important object of the present invention is the provision of means for supporting the test tube tray in angular position. This means comprises an easel support which removably secured to the tray. In the simplest embodiment of this invention, the tray is formed with an inverted well or socket to receive the easel support. This well or socket is the reverse side of a hollow partition between test tube compartments formed in the tray. The easel support may be nothing more complicated than a sheet of corrugated board. If desired, the corrugated board may have a folded lower flap which serves as a foot for the easel.

One of the principal advantages of the above-described construction resides in its simplicity and low cost. The tray may be made of thermoplastic sheet plastics vacuum-formed to provide at least two compartments for the test tubes. The hollow partition between the compartments is open in downward direction and closed in upward direction to form a relatively

deep, narrow socket or slot to receive a sheet of corrugated board which may be inserted therein to support the tray in a handy, tilted position on a horizontal surface. The hollow partition serves not only as a receptacle for the easel support but also as a wall separating the compartments and helping to support the test tubes in parallel relation to each other with their respective longitudinal axes perpendicular to the floor of the tray.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a side view of a test tube tray made in accordance with the present invention, showing it supported in handy tilted position by means of an easel support.

FIG. 2 is a back view of said test tube tray and easel support.

FIG. 3 is a vertical section taken on the line 3—3 of FIG. 2.

FIG. 4 is a plan view of the easel support before it is bent or folded into its operative condition shown in FIGS. 1 and 3.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

Referring to the drawing, the present invention comprises a tray 10 for a plurality of test tubes 12 or the like, and an easel support 14 which may be removably attached to the tray to support it in a handy tilted position for removal of the test tubes. The test tube tray 10 may be made of thermoplastic sheet plastics, vacuum-formed under heat and pressure to the shape shown in FIGS. 1, 2 and 3 of the drawing or any other suitable or conventional receptacle form. The tray is provided with a bottom wall 16, end walls 18 and 20 respectively and sidewalls 22 and 24 respectively. A peripheral flange 26 is formed along the top edges of the end and side walls, extending laterally outwardly therefrom to form a reinforcing, stiffening lip. Appropriate embossments 28 may be formed in the end and sidewalls to provide them with sufficient rigidity and strength and ribs 30 may be formed in flange 26 for the same purpose.

As shown in FIG. 3, tray 10 is provided with a pair of compartments 32 and 34 respectively. It may be provided with more than two compartments. Separating the compartments from each other is a hollow partition 36 which extends upwardly from the bottom wall 16 of the tray. In the vacuum forming process, partition 36 is simply an inner fold formed in the bottom wall 16. The partition has spaced walls 38 and 40 which define a narrow sock or slot 42 between them. This socket or slot is closed at the top and open at the bottom and may also be open at its ends. This is clearly shown in FIGS. 1 and 3.

It will also be seen in FIGS. 1 and 3 that socket or slot 42 is adapted to receive easel support 14. In the simplest preferred form of this invention, this easel support is made of a sheet of corrugated board 46 or the like. This sheet is generally rectangular in shape, as shown in FIG. 4. It has a fold line 48 extending across its width and parallel to its ends 50 and 52. To facilitate the folding operation, notches 54 and 56 may be formed at the ends of fold line 48.

To assemble and use the above device, corrugated board 46 is folded along its fold line 48 to an angle of approximately 45°. See FIGS. 1 and 3. This angle is not critical and in any event, as will shortly be seen, the board will form its own appropriate angle when assembled with the tray and placed on a supporting surface. One end 52 of the board is inserted into the socket or slot 42 of the tray. The assembly is now complete and the tray and its easel support may now be placed on a horizontal surface 58, such as a laboratory table top. The shorter end 50 will rest flat against the table, thereby seeking its own angle with respect to the larger end 52. The larger end 52 will serve as the strut proper while the shorter end 50 will serve as a foot for the strut.

It will be apparent from the foregoing that the angle at which the tray may be supported is a variable, to be determined by whatever position is most convenient in a given situation. By the simple expedient of making the strut portion

52 of the easel either longer or shorter, the angle at which the tray is supported will be varied. A 45 degree angle between the floor of the tray and the supporting horizontal surface has been found most convenient for laboratory use. The user may prefer that the tray be supported at a smaller angle relative to the horizontal. In such case, all that need be done is to shorten the length of strut 52. Since it is made, in its preferred form, of corrugated board, this may be done with a pair of scissors.

It will now be observed that test tubes 12 are supported in the tray at substantially the same angle relative to the horizontal as the strut 52. This is not a critical relationship but it derives from the fact that hollow partition 36 is substantially parallel to the end walls 18 and 20 of the tray. Actually, in the molding or vacuum-forming process, the end walls of the tray, and the walls of the hollow partition, are formed at an angle of slightly less than 90° with respect to the floor of the tray. Walls 18 and 40 would be substantially parallel to each other and this is equally true of walls 20 and 38. Since strut 52 occupies the space between partition walls 38 and 40, it will lie in a plane which is substantially parallel to the longitudinal axes of the test tubes in the tray.

When the test tubes are individually removed from the tray, the upper tubes are the first to be removed and the process continues from the upper to the lower ends of the tray as depicted in FIG. 1 of the drawing. The upper tubes are indicated by means of interrupted lines while the lower tubes are shown in solid lines. This is intended to illustrate the sequence of removal of the tubes, starting with the upper tubes in each of the compartments of the tray.

It will be understood that the foregoing is illustrative of a preferred form of this invention and that variations and modifications may be incorporated therein within the broad scope of the appended claims. For example, the easel support need not be made of sheet material and certainly not necessarily of corrugated board. Similarly, the socket for the easel need not be made in the form of a slot as shown in the draw-

ing. A socket of any suitable shape, adapted to accommodate an easel of corresponding shape, will meet the requirements of the present invention.

What is claimed is:

1. An easel-supported tray for test tubes and other articles, comprising:
 - a. a tray provided with at least two compartments;
 - b. a socket formed in the bottom of the tray comprising a hollow partition provided between said compartments;
 - c. said hollow partition being open at the bottom of the tray to form said socket; and
 - d. an easel support projection into said hollow partition through the open bottom end thereof.
2. An easel-supported tray in accordance with claim 1, wherein:
 - a. the easel support comprises a board which is adapted to be cut to selected length,
 - b. to determine the angle of elevation of the tray.
3. An easel-supported tray in accordance with claim 1, wherein:
 - a. the tray comprises a vacuum-formed plastic molding; and
 - b. the easel support comprises an element which can be cut to selected length
 - c. in order to control the angle of elevation of the tray.
4. An easel-supported tray in accordance with claim 3, wherein the easel support is made of paperboard.
5. An easel-supported tray in accordance with claim 3, wherein:
 - a. the easel support board has upper and lower portions which are joined along a horizontally extending fold line;
 - b. the upper board portion being insertable into the socket in the bottom of the tray; and
 - c. the lower board portion being foldable into a horizontal plane to form a foot for the easel support.

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