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TRAY FOR LIQUIDS

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FIG. 1

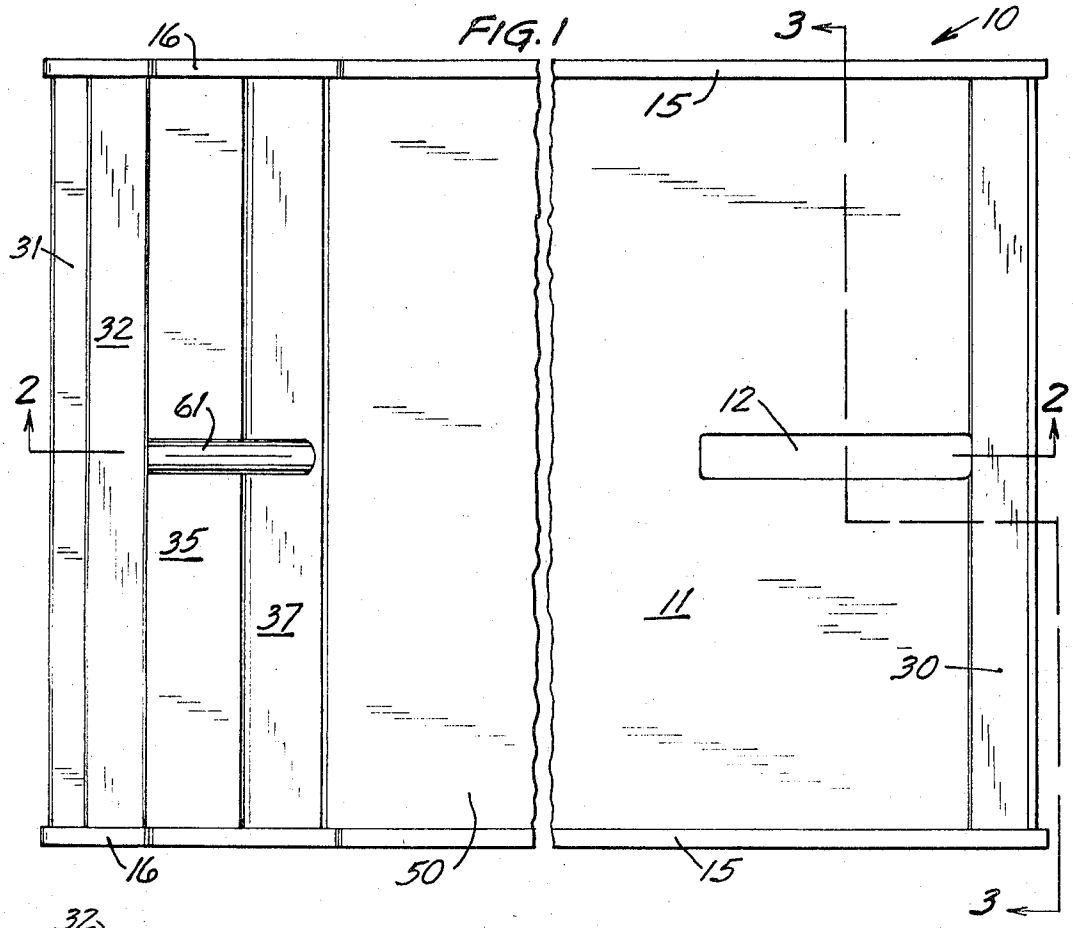


FIG. 2

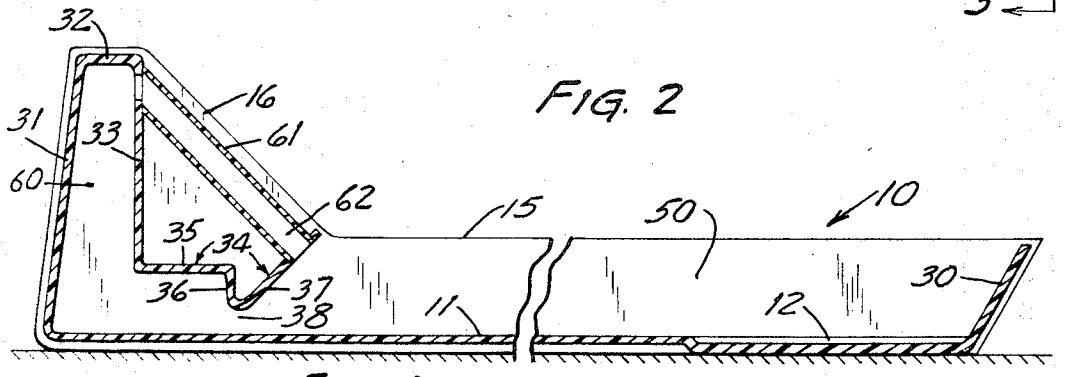
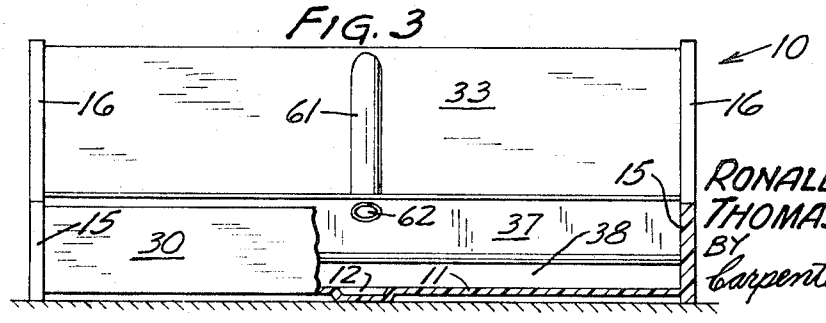


FIG. 3



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TRAY FOR LIQUIDS

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ABSTRACT OF THE DISCLOSURE

A combination storage and processing tray for volatile or oxidizable liquids, for example, for processing photographic materials, which permits facile dispensing of the liquid from the storage area to the work area merely by laying the tray into a horizontal work position from a generally upright storage position. The liquid is returned to the storage area from the work area by raising the tray from the horizontal work position to a generally upright storage position. The configuration of the storage area restricts the surface area of the volatile or oxidizable liquid which is exposed to the atmosphere during storage.

The present invention relates to a tray, and more particularly relates to a tray for the storage of volatile or oxidizable liquids on the one hand and which readily dispenses the stored liquid into the work area of the tray merely upon positioning the tray into a generally horizontal work position on the other hand.

The tray of the present invention is eminently suited for use in the chemical processing of photographic materials where the chemicals utilized are notoriously oxidizable by exposure to light and air. Accordingly, the invention will be hereinafter described with reference to such uses but it should be understood that the invention is not intended to be so limited.

The various chemical solutions used in the processing of photographic materials such as negatives and prints are readily oxidized upon exposure to light and air. They are, therefore, ordinarily stored in dark bottles until required for processing photographic materials and rebottled immediately after use to retard the oxidation process—this is true even when the processing operation is interrupted for relatively short periods of time.

It is, therefore, much to be desired to provide equipment which will protect the chemical solutions from oxidation and evaporation while obviating the need for repeated rebottling of said solutions whenever the processing operation is interrupted.

An object of the present invention is to provide a combination storage and processing tray which permits facile dispensing of the processing solution from the storage chamber to the working area of the tray and conversely permits easy return of the solution to the storage chamber after use.

Another object of the invention is to provide a tray which protects the solution during its storage from the oxidizing effects of both light and air.

These and other objects and advantages will become readily apparent to those skilled in the art from the following detailed description and disclosure, especially in light of the accompanying drawings, wherein like numerals refer to corresponding parts in the several diagrammatic views, in which:

FIGURE 1 is a top plan view of the tray of the present invention;

FIGURE 2 is a sectional view of the tray taken along the line 2—2 of FIGURE 1; and

FIGURE 3 is an elevational view, partly in section, of the tray taken along the line 3—3 of FIGURE 1.

Referring to the drawings, the tray **10** comprises a work area **50** generally defined by bottom member **11**, side wall members **15**, and end wall members **30** and **31**, and a storage chamber **60**. Side wall members **15** are provided at one end with trapezoidal projections **16** which together with end wall member **31**, front wall member **32**, top wall member **33**, barrier wall member **34** comprising members **35**, **36** and **37** and that portion of bottom member **11** lying beneath said projections **16** generally form said storage chamber **60**.

Storage chamber **60** is vented to the atmosphere through a breather tube **61** having a restricted orifice **62**. Breather tube **61** is suitably fastened at one end to top wall member **33** of storage chamber **60** and to member **37** of barrier wall **34** at its other end. The location of breather tube **61** at the end of top wall member **33** of storage chamber **60** remote from the bottom of the tray and toward the free end of member **37** of barrier wall **34** (as clearly seen in FIGURES 2 and 3) insures the virtual elimination of spillage of solution from the tray either during storage or when lowering or raising the tray to its work or storage position, respectively. While it is desirable that the orifice **62** of breather tube **61** be of sufficiently small size to restrict the surface area of the solution contained within the storage chamber **60** which is exposed to the atmosphere through said orifice, it is understood that the orifice should be of a size sufficient to permit the solution to readily flow out of said storage chamber **60** into the work area **50** of the tray.

Storage chamber **60** is so designed that its storage capacity bears a direct relationship to the volume of liquid ordinarily required for the processing operation, i.e., the storage capacity is as nearly equal to the working volume of processing liquid so that the liquid level in the storage chamber is at the zone of constriction, thus having only a small surface area of said liquid exposed to air.

Barrier wall **34**, which is shown in the drawings as having a right-angularly offset member **36** connecting the horizontal member **35** with the obliquely offset member **37**, forms, with bottom member **11**, a narrow restricted trough-shaped opening **38** connecting storage chamber **60** with work area **50**. It will be observed that obliquely offset member **37** serves as a "funnel" when liquid contained in work area **50** is being returned to storage chamber **60** after use. It will also be observed that because of the narrowness of the restricted trough-shaped connecting opening **38**, only a small surface area of the liquid in storage chamber **60** is exposed to the atmosphere when tray **10** is in the upright storage position with end wall member **31** disposed at the base. If it is desired to utilize the tray of the present invention as a semi-permanent storage vessel, a wedge-shaped stopper having a complementary configuration to that formed by obliquely offset member **37** and bottom member **11**, and extending beyond orifice **62** of breather tube **61**, could be used to occlude the atmosphere.

While barrier wall **34** has been shown and described as having a rather complex shape, it is understood that other simpler configurations will perform the contemplated functions of said barrier wall **34**. Thus, barrier wall **34** can be formed with two substantially right angularly oriented members, i.e., member **35** could be oriented substantially parallel to breather tube **61** and joined to member **37**, thus eliminating member **36** altogether while at the same time providing a larger zone of constriction.

Bottom **11** of tray **10** is provided at the end remote from storage chamber **60** with a generally rectangular depression **12** of such dimensions that one blade of a pair of tongs conventionally used in processing photographic

materials may be easily slipped thereinto and under a print or negative resting on bottom **11** of the tray.

Since the trays of the instant invention will, in many instances, be used with chemical solutions which are corrosive to metals, they will ordinarily be fabricated of nonmetallic opaque synthetic resinous materials such as the phenolic resins, Bakelite, polypropylene, polyvinyl chloride, melamines, high density polyethylene, high impact polystyrene and acrylic plastics.

In use in processing photographic materials, trays **10** (usually three in number) would be filled with a suitable quantity of processing solutions such as developer, stop bath and hypo, respectively. (At this time, the trays would be in a horizontal or work position.) After a number of photographic prints have been processed by being passed sequentially through the developer, stop bath and hypo trays in the conventional manner, the operator would merely grasp each of the trays at end wall **30** and raise it to a generally upright or storage position. In so doing, the solution contained in work area **50** would be "funnelled" into storage chamber **60** by obliquely offset member **37** of barrier wall **34** in readiness for subsequent reuse. Tray **10** has been found to be extremely stable in its storage position due to the configuration of storage chamber **60** and especially since the weight of the stored liquid is concentrated and distributed across the entire base area with end wall member **31** disposed as the base. When it is desired to process a further number of photographic prints, the operator merely lays the trays into a horizontal or work position whereupon the solution in storage chamber **60** will readily flow into work area **50**. It has been found that the flowing of the solution from storage chamber **60** into work area **50** occurs in a gentle wave-like manner—this agitating action reduces to some extent the necessity for agitating the print during processing. In fact, manual agitation of the print can be essentially eliminated if the tray is returned to its storage position after processing each print and immediately prior to removing the print from the tray. The print would then be substantially drained of solution thus reducing contamination of the succeeding solution and effectively stopping the processing action of the solution, especially the developer. The next print is placed in the tray simultaneously with the laying down of the tray thus insuring complete immersion of the print in the processing solution.

While one embodiment of the invention has been described herein, it will be obvious that various alterations and modifications of the specific configurations may become apparent to those skilled in the art without departing from the scope of the invention.

We claim:

1. A tray for use with an oxidizable solution, said tray being formed to contain a quantity of said solution in a substantially enclosed storage chamber when in a generally upright storage position and to dispense said solution into a shallow work area when placed in a horizontal work position, said tray comprising a bottom member, opposed side walls having at one end projections forming end walls for said storage chamber, wall means joined to and forming the bottom, front and top walls of said storage chamber between said end projections and said bottom member, a barrier wall joined to said end projections and to said top wall of said storage chamber and angularly disposed relative to said bottom member to form a restricted trough-shaped opening connecting said storage chamber and said work area, said storage chamber being vented to the atmosphere through a breather tube of restricted cross-section, and an end wall joined to the ends of said side walls remote from said projections to form the end of said work area.

2. A tray according to claim **1** wherein the breather tube is connected at one end to the top wall of said storage chamber and at its other end to the free end of said barrier wall such that any liquid coursing through said breather tube will be discharged into the storage chamber or work area, respectively.

3. A tray according to claim **2** wherein said restricted trough-shaped opening extends the full width of said tray.

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JAMES B. MARBERT, *Primary Examiner.*

U.S. Cl. X.R.

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