Feb. 15, 1955 E. H. LAND 2,702,146

CONTAINER FOR CARRYING LIQUID COMPOSITIONS

Filed March 27, 1952

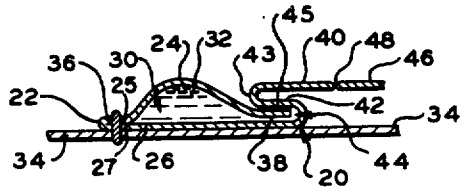


FIG. 1

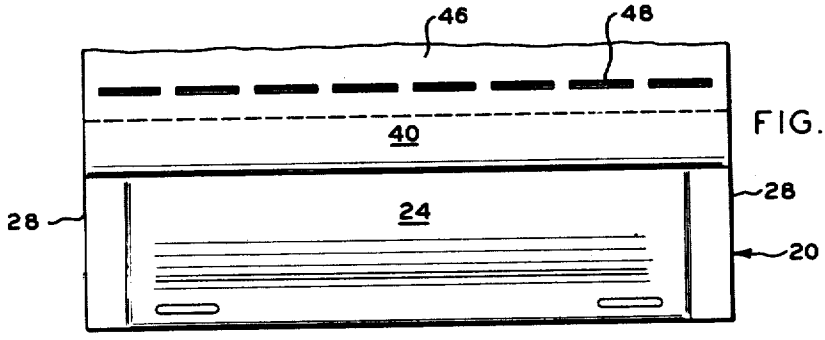


FIG. 2

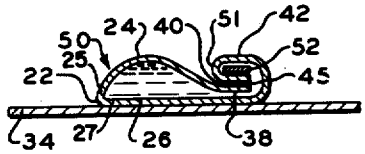


FIG. 3

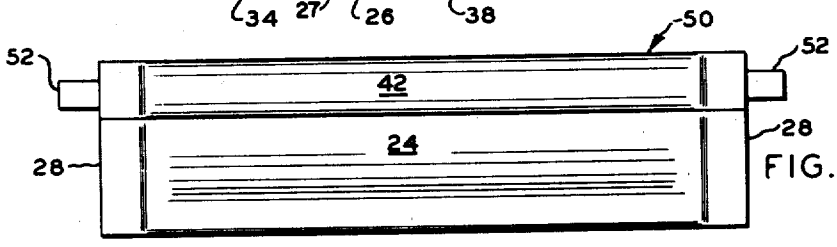


FIG. 4

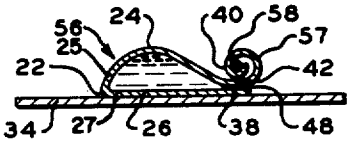


FIG. 5

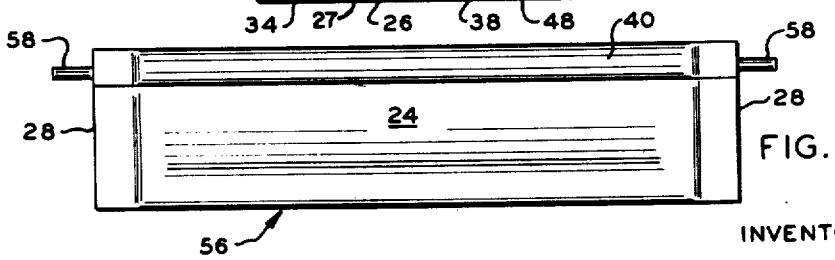


FIG. 6

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United States Patent Office 2,702,146
Patented Feb. 15, 1955

2,702,146

CONTAINER FOR CARRYING LIQUID COMPOSITIONS

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Application March 27, 1952, Serial No. 278,934

13 Claims. (Cl. 222—107)

This invention relates to containers for liquid compositions and more particularly to novel containers for liquid compositions which are useful in processing photosensitive materials.

This application is a continuation-in-part of my copending application Serial No. 712,887, filed November 29, 1946, for Photographic Product Including a Container and Means for Rupturing said Container (now Patent No. 2,612,451, isssued September 30, 1952).

Objects of the present invention are to provide a container for carrying a liquid composition, said container being provided with a rupturable sealed mouth and novel means for opening the mouth in order to permit ejection of liquid composition from within the container; to provide a container of the above type comprising a first section and a second section, the inner surfaces of said sections defining a cavity, said first section including a first edge portion and a second edge portion, said second section including a third edge portion, a continuation portion and an intermediate portion positioned between said third edge portion and said continuation portion, a bend betwten said intermediate portion and said continuation portion, said first and third portions being connected, a rupturable seal connecting said second edge portion and one of the portions of said second section, a member operatively connected with said continuation portion, said member, when caused to move with respect to said cavity, causing movement of said one portion with respect to said second edge portion whereby rupture of said seal occurs; and to provide a container of the above type which is simple in operation and inexpensive in construction.

These and other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the product possessing the features, properties and the relation of components which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claims.

For a further understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings wherein:

Figure 1 is an exaggerated, diagrammatic, sectional view of one embodiment of the invention;

Fig. 2 is a top plan view of the embodiment of Fig. 1;

Fig. 3 is an exaggerated, diagrammatic, sectional view of another modification of the invention;

Fig. 4 is a top plan view of the modification of Fig. 3;

Fig. 5 is an exaggerated, diagrammatic, sectional view of a further modification of the invention; and

Fig. 6 is a top plan view of the modification of Fig. 5.

It has been proposed that an exposed photosensitive sheet be processed by superposing it on another sheet and by spreading a thin layer of processing composition between said sheets. The photosensitive sheet, for example, may comprise a silver halide layer. In one form thereof, the second sheet comprises a silver precipitating layer. The processing composition may comprise a developer, a silver halide solvent, an alkali and a viscosity-increasing, film-forming material such as an alkali-inert polymer. In practice, superposition of the sheets, with a thin layer of processing composition therebetween, may be accomplished by advancing the sheets between a pair of pressure-applying members, such as rollers. The result of one such procedure is to develop the latent image on the photosensitive sheet to silver in order to form in a frame of the photosensitive sheet a soluble silver complex from unexposed silver halide for transfer to the other sheet. This complex, at least in part, may be transferred by imbibition to an area of the other sheet where it may be developed to silver to produce a positive image.

In accordance with the present invention, liquid composition to be spread between the photosensitive and other sheets is supplied from at least a container secured or otherwise associated with one of the sheets. This container preferably is formed from a blank of sheet material longitudinally folded on itself to provide an upper section and a lower section, the end portions of the upper section being secured to the end portions of the lower section and given portions of the lower and upper sections opposite the fold being constructed and arranged to provide a novel rupturable sealed mouth. Associated with the sealed mouth is a member which, when moved with respect to the container, causes relative movement between the aforementioned given portions whereby rupture of the sealed mouth occurs. Movement of the member with respect to other portions of the container may result, for example, from abutment of the member against an element connected to a housing through which the sheet associated with the container is advancing.

In the past, containers of the aforementioned type have been caused to release the liquid composition therewithin upon advancement between a pair of pressure-applying members. In accordance with the present invention a container of the aforementioned type is positively opened along a predetermined portion thereof in order to assure an even distribution of liquid throughout a predetermined area of a sheet associated with such a container. By virtue of this construction the rupturable seal closing the container mouth may be made stronger than previously proposed seals so that the container may have great resistance to inadvertent hydraulic bursting during handling thereof.

Referring now to the drawings, Fig. 1 illustrates a container, generally designated by **20**, embodying the present invention. Container **20** is formed from a blank of oxygen and water-vapor impervious sheet material folded at **22** to form an upper section **24** and a lower section **26**. One example of a suitable sheet material is a metal foil having an outer backing of paper and an inner coating of an alkali-inert resin, such as polyvinyl butyral. End portions **28** of upper and lower sections **24** and **26** are joined under heat and pressure so as to cause the resin coating to form tight seals.

The inner surfaces of lower and upper sections **26** and **24** define a cavity **30** for carrying a liquid composition **32**. Edge portions **25** and **27** of upper and lower sections **24** and **26**, respectively, are integrally connected as at **22** and the end portions of the upper and lower sections are joined as at **28**. Liquid composition **32**, for example, may comprise an alkaline aqueous solution of a developer and a silver halide solvent.

Container **20**, preferably, is secured to a sheet **34**, which may be either of the aforementioned photosensitive and other sheets, by such means as a staple **36** or a suitable adhesive.

In accordance with the present invention, section **24** includes an edge portion **38** and section **26** includes a continuation portion **40** and an intermediate portion **42**. Viewing Fig. 1, intermediate portion **42** is folded up and over portion **38** and is connected to continuation portion **40** by a reverse bend **43**. Edge portion **38** and intermediate portion **42** defines a mouth **44** through which liquid composition **32** may be ejected from cavity **30**. Mouth **44** normally is closed by a seal **45** which joins the inner surface of intermediate portion **42** and the outer surface of edge portion **38**, the seal being composed of one of the numerous plastic adhesives known in the art, such as ethyl cellulose or polyvinyl butyral. Seal **45** is not as strong as the seals formed at end portions **28**. Continuation **40** is provided with a tab **46** separated therefrom by a weakened portion **48**. Weakened portion **48** preferably is stronger than seal **45**, but weaker than the bond between container **20** and sheet **34**. If a predetermined tension is created on continuation **40**, as a result of relative movement between tab **46** and sheet **34**, a sufficient force is transmitted to intermediate portion **42**

to cause rupture of seal 45. Increase in the tension between tab 46 and continuation 40 now causes weakened portions 48 to tear.

In the use of the modification of Fig. 1, tab 46 may be secured to the photographic housing with which sheet 24 and container 20 are associated and sheet 34 may be advanced with respect to the housing. Such advancement causes transmission of tension to intermediate portion 42 and rupture of seal 45. The tearing of weakened portion 48 after rupture of seal 45 prevents separation of container 20 from sheet 34.

Figs. 3 and 4 illustrate another container embodying the present invention, this container being shown at 50, like elements of containers 50 and 20 being designated by like numerals. In container 50, intermediate portion 42 is folded over edge portion 38 and is connected to continuation portion 40 by a reverse bend 57, there being secured between continuation 40 and intermediate portion 42 a rigid member 52, such as a strip of metal. A seal 45 joins the outer surface of edge portion 38 and the outer surface of continuation 40. Member 52 extends beyond end portions 28 so as to be adapted to be engaged by a means, forming part of the photographic apparatus with which sheet 34 is associated, upon relative movement between the apparatus and the sheet.

Viewing Fig. 3, movement of member 52 to the right causes movement of continuation 40 with respect to edge portion 38 and rupture of seal 45.

Figs. 5 and 6 illustrate a further container embodying the present invention, this container being shown at 56, like elements of containers 56 and 20 being designated by like numerals. In container 56, continuation 40 is in the form of a curl and is connected to intermediate portion 42 by a reverse bend 57. Secured within the curl is a member 58 composed, for example, of wood or metal. A seal 45 joins the inner surfaces of peripheral portion 38 and intermediate portion 42. Member 58 extends beyond end portions 28 so as to be adapted to be engaged by a means, forming part of the photographic apparatus with which sheet 34 is associated, upon relative movement between the apparatus and the sheet. This relative movement may be linear, rotary, or both linear and rotary.

Viewing Fig. 5, rotary movement of member 58 in a counterclockwise direction causes movement of intermediate portion 42 with respect to edge portion 38 and rupture of seal 45.

In all of the above modifications of the invention a preferred form of liquid composition comprises one containing a developer, such as hydroquinone, a preservative, such as sodium sulfite, an alkali, such as sodium hydroxide, a film-forming material, such as sodium carboxymethyl cellulose, and a silver halide solvent, such as sodium thiosulfate. It is possible, however, that the liquid composition in the container may comprise only water or an aqueous solution of a film-forming material. The other elements of the liquid may be positioned in solid form upon one of the layers of the film unit with which the container is to be used. In some other cases it is desirable to include portions of the active ingredients within the liquid composition and to place other portions thereof in solid form upon one or more of the layers of the film unit.

The liquid composition may also include only materials useful in developing, or developing and fixing, a latent negative image with no emphasis on the production of a positive image.

Since certain changes may be made in the above product without departing from the scope of the invention herein involved, it is intended that all matter contained in the above description, or shown in the accompanying drawings, shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A container comprising a first section and a second section, the inner surfaces of said sections defining a cavity, said first section including a first edge portion and a second edge portion, said second section including a third edge portion, a continuation portion and an intermediate portion positioned between said third edge portion and said continuation portion, said first and third edge portions being connected, said second edge portion and said intermediate portion defining a mouth therebetween through which the contents of said cavity may be ejected therefrom, and a rupturable seal connecting said second edge portion and one of said intermediate portion and said continuation portion, the other of said intermediate portion and said continuation portion, when caused to move with respect to the remainder of said container, causing movement of said one portion with respect to said second portion whereby rupture of said seal occurs.

2. A container comprising a first section and a second section, the inner surfaces of said sections defining a cavity, said first section including a first edge portion and a second edge portion, said second section including a third edge portion, a continuation portion and an intermediate portion positioned between said third edge portion and said continuation portion, said continuation portion being connected to said intermediate portion by a bend, said first and third edge portions being connected, said third edge portion and said intermediate portion defining a mouth therebetween through which the contents of said cavity may be ejected therefrom, a rupturable seal connecting said second edge portion and one of the said intermediate portions and said continuation portion, and a member operatively connected with the other of said intermediate portion and said continuation portion, said member, when caused to move with respect to said cavity, causing movement of said one portion with respect to said second edge portion whereby rupture of said seal occurs.

3. A container comprising a first section and a second section, the inner surfaces of said sections defining a cavity, said first section including a first longitudinal edge portion, a second longitudinal edge portion and end portions, said second section including a third longitudinal edge portion, a continuation portion, end portions, and an intermediate portion positioned between said third edge portion and said continuation portion, said continuation portion being connected to said intermediate portion by a reverse bend, said first and third edge portions being connected, the end portions of said first section being joined to the end portions of said second section, said second longitudinal edge portion and said continuation portion defining therebetween a mouth through which the contents of said cavity may be ejected therefrom, a rupturable seal connecting said second longitudinal edge portion and one of said intermediate portion and said continuation portion, and a member operatively connected with the other of said intermediate portion and said continuation portion, said member, when caused to move with respect to said cavity, causing movement of said one portion with respect to said second longitudinal edge portion whereby rupture of said seal occurs.

4. A container comprising a first section and a second section, the inner surfaces of said sections defining a cavity, a liquid composition within said cavity, said first section including a first longitudinal edge portion, a second longitudinal edge portion and end portions, said second section including a third longitudinal edge portion, a continuation portion, end portions, and an intermediate portion positioned between said third longitudinal edge portion and said continuation portion, said continuation portion being connected to said intermediate portion by a reverse bend, said first and third longitudinal edge portions being connected, the end portions of said first section being joined to the end portions of said second section, said second longitudinal edge portion and said continuation portion defining a mouth therebetween through which said liquid composition may be ejected from said cavity, a rupturable seal connecting said second portion and one of said intermediate portion and said continuation portion, and a member operatively connected with the other of said intermediate portion and said continuation portion, said member, when caused to move with respect to said cavity, causing movement of said one portion with respect to said second portion whereby rupture of said seal occurs.

5. The container of claim 2 wherein said intermediate portion constitutes said one portion.

6. The container of claim 2 wherein said continuation portion constitutes said one portion.

7. The container of claim 2 wherein said seal connects the inner surfaces of said second edge portion and said one portion.

8. The container of claim 2 wherein said seal connects the outer surface of said second edge portion and the inner surface of said one portion.

9. The container of claim 2 wherein said seal con-

nects the outer surfaces of said second edge portion and said one portion.

10. The container of claim 2 wherein said member constitutes a tab connected to said continuation portion by material that is weaker than said continuation portion but stronger than said seal.

11. The container of claim 2 wherein said continuation portion is in the form of a curl and wherein said member is positioned at the center of the curl and is capable of rotary motion.

12. The container of claim 2 wherein said member extends beyond the opposite ends of the first and second sections, said member being of rigid construction.

13. A container comprising a first section and a second section, each section comprising a metal foil having an outer backing of paper and an inner coating of an alkali-inert polymer, the inner surfaces of said sections defining a cavity, said first section including a first longitudinal edge portion, a second longitudinal edge portion and end portions, said second section including a third longitudinal edge portion, a continuation portion, end portions, and an intermediate portion positioned between said third longitudinal edge portion and said continuation portion, said continuation portion being connected to said intermediate portion by a reverse bend, said first and third longitudinal edge portions being integrally joined, the end portions of said first section being joined to the end portions of said second section, said second longitudinal edge portion and said intermediate portion defining a mouth therebetween through which the contents of said cavity may be ejected therefrom, a rupturable adhesive seal connecting said second longitudinal edge portion and one of said intermediate portion and said continuation portion, and a member operatively connected with the other of said intermediate portion and said continuation portion, said member, when caused to move with respect to said cavity, causing movement of said one portion with respect to said second portion whereby rupture of said seal occurs.

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