# United States Patent [19]

**Baker et al.**

[11] **3,776,425**

[45] **Dec. 4, 1973**


[54] **SYSTEM FOR RUPTURING POD CONTAINING PROCESSING FLUID FOR PHOTOGRAPHIC MATERIAL**


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[73] Assignee: **Polaroid Corporation**, Cambridge, Mass.



[22] Filed: **June 1, 1972**

[21] Appl. No.: **258,843**

**Related U.S. Application Data**

[62] Division of Ser. No. 838,783, July 3, 1969, Pat. No. 3,687,051.

[52] **U.S. Cl.** ..... **222/101**

[51] **Int. Cl.** ..... **B65d 35/28**

[58] **Field of Search** ..... 222/101, 107, 214, 222/215, 541, 386, 323, 87, 95, 102, 103, 105, 156



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| 2,848,141 | 8/1958 | Intagliata | 222/101 |
| 3,220,616 | 11/1965 | Jennings | 222/156 |
| 3,543,966 | 12/1970 | Ryan et al. | 222/101 |



*Primary Examiner*—Samuel F. Coleman
*Attorney*—Robert L. Berger

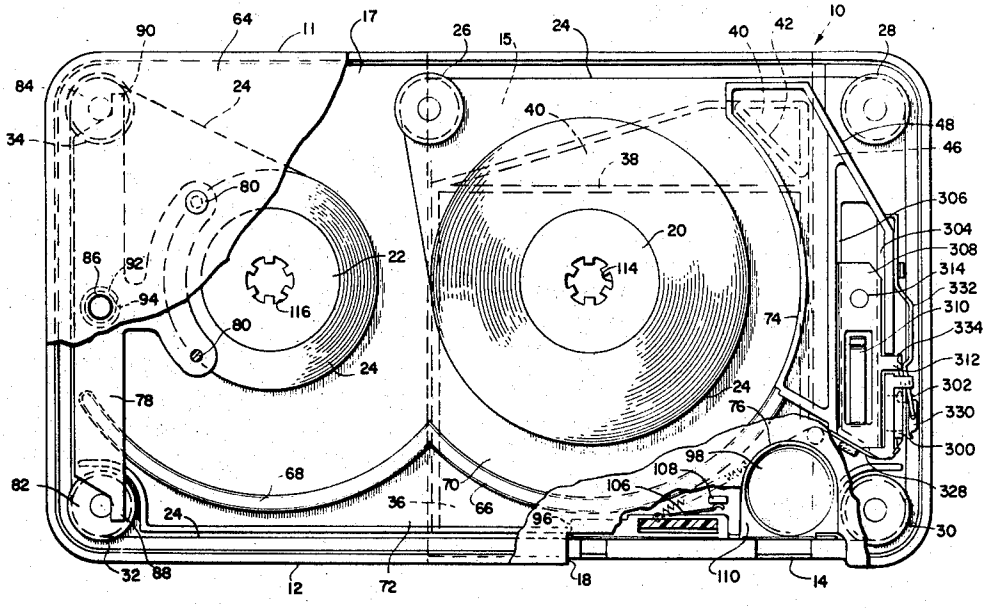


[57] **ABSTRACT**

A system for rupturing a pod having a weakened edge portion and containing processing fluid for photographic material and for expelling the fluid therefrom. The fluid filled pod is mounted adjacent a support surface and protected by a flexible cover plate. A rigid member is initially disposed between the cover plate and the support surface adjacent the end of the rupturable pod furtherest removed from the pod's weakened portion. Extending along the inside face of the cover plate is a rib which initially presses the section of the pod adjacent thereto against the support plate so that substantially no fluid is disposed within the pod between the rib and the support plate. The cover plate includes access means whereby externally mounted force applying means may be introduced into the space between the cover plate and the support surface to displace the rod across the length of the pod. The cover plate is deflected by the rod during its displacement across the pod and at the same time presses the rod firmly against the pod.

This system can advantageously be employed in a compact multi-purpose film handling cassette adapted to be inserted into a unique processor-projector unit containing the aforementioned force applying means.


**17 Claims, 9 Drawing Figures**



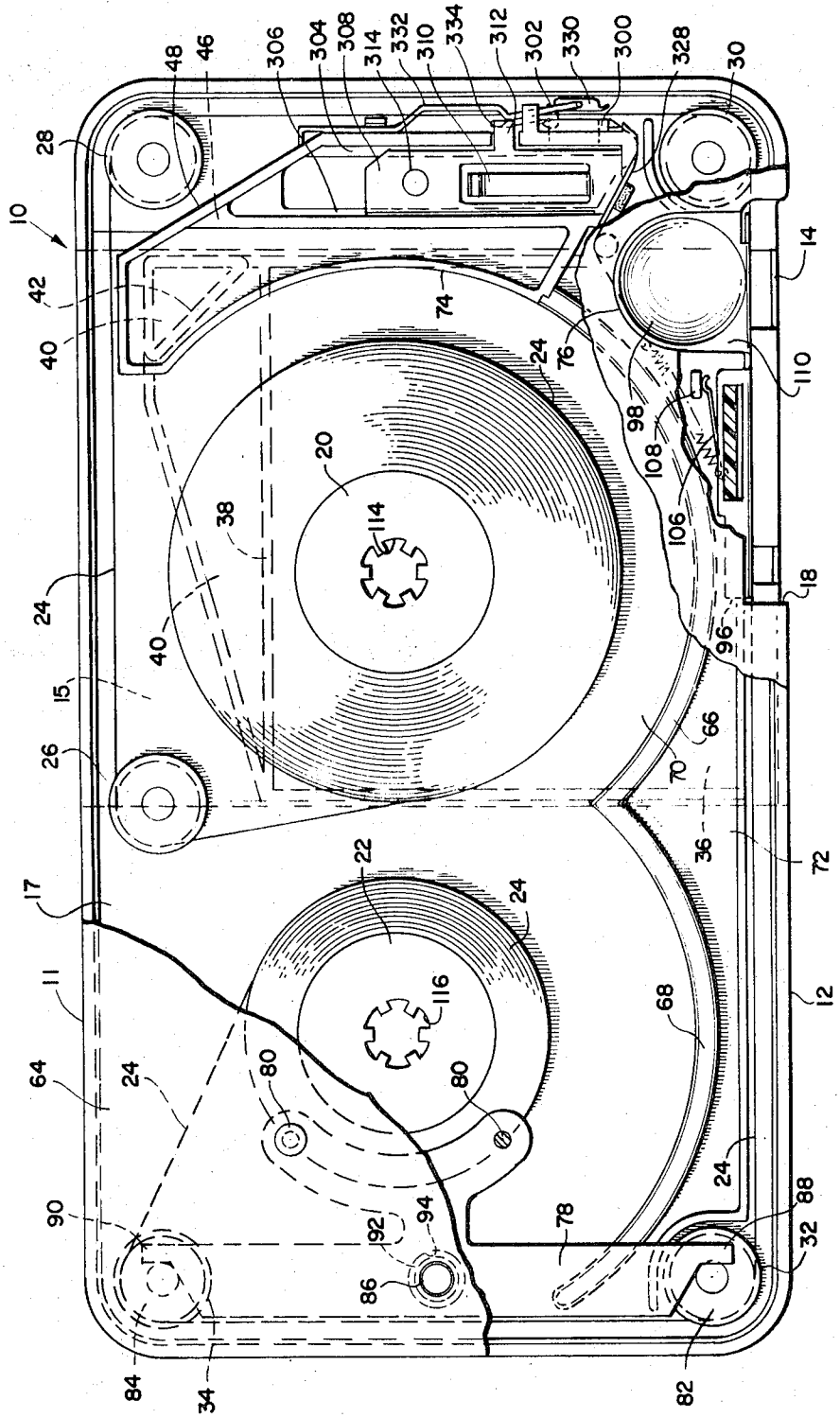

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FIG. 1

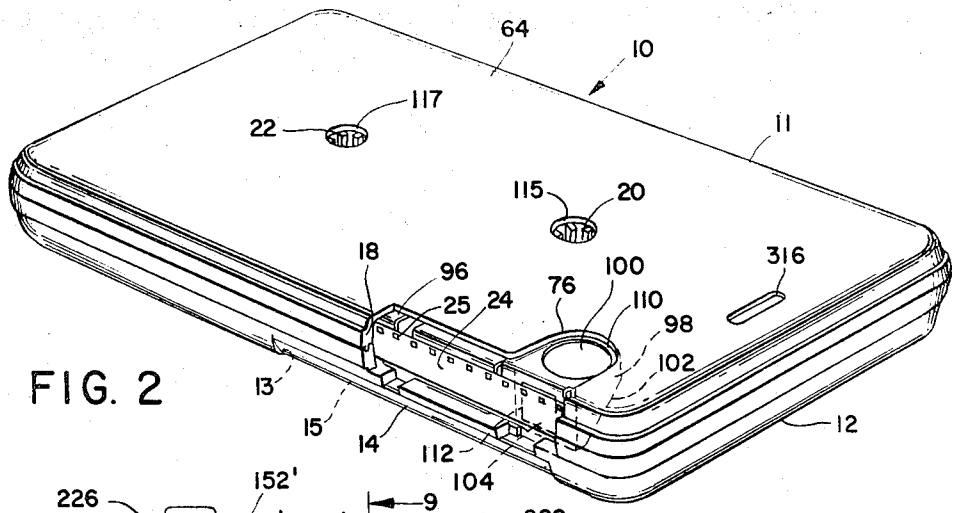
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FIG. 2

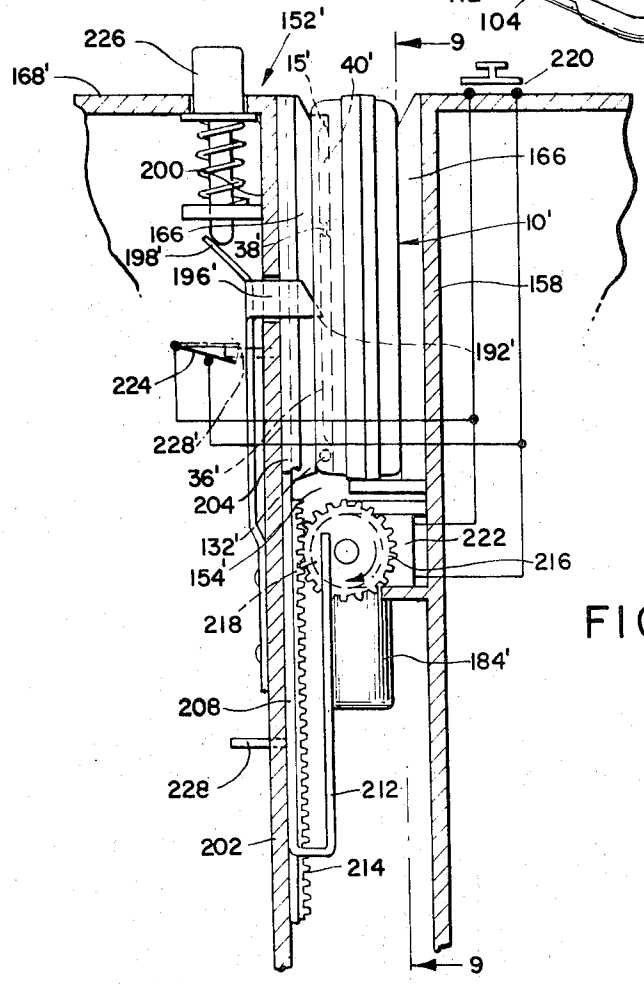
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FIG. 8

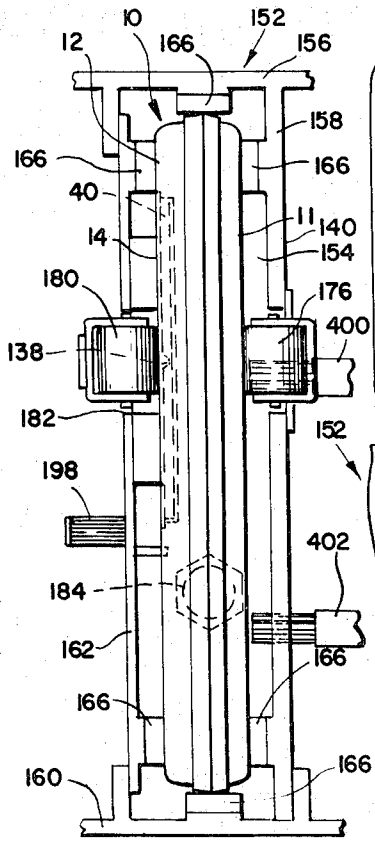


FIG. 6

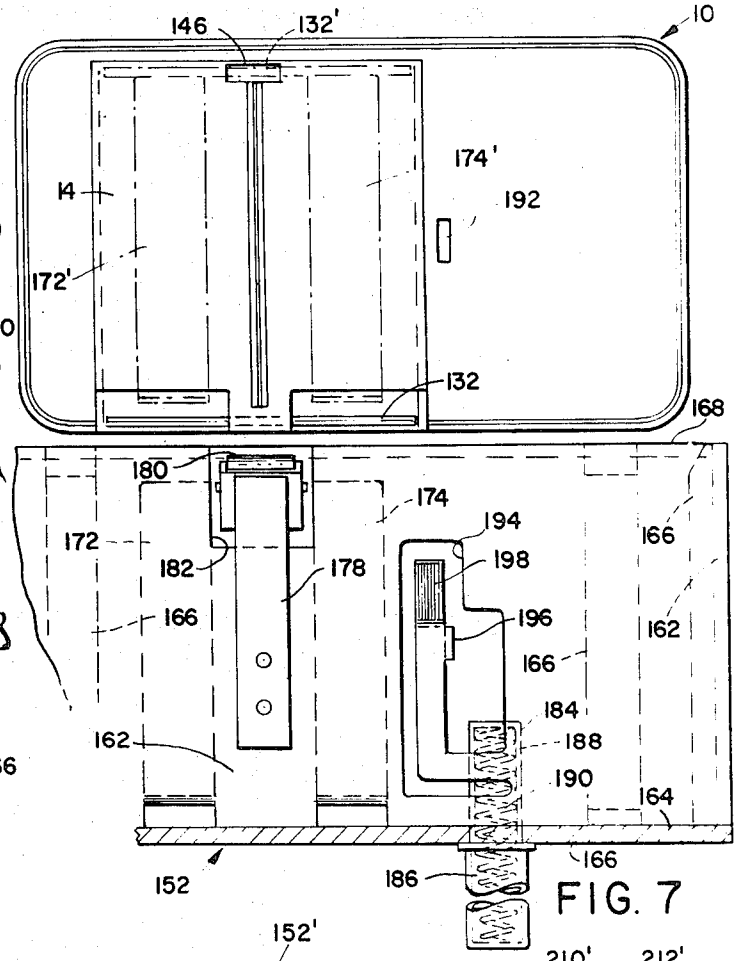


FIG. 7

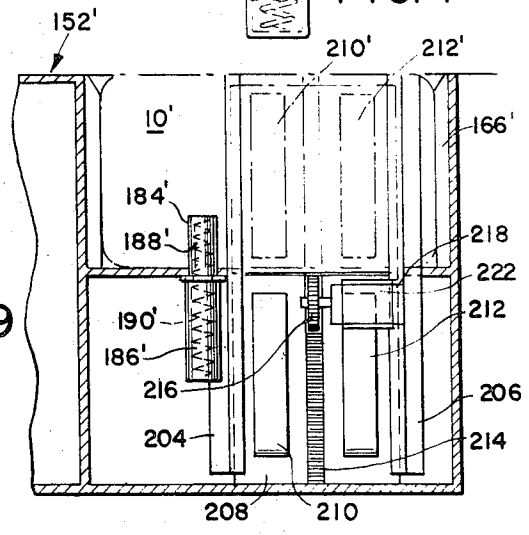


FIG. 9

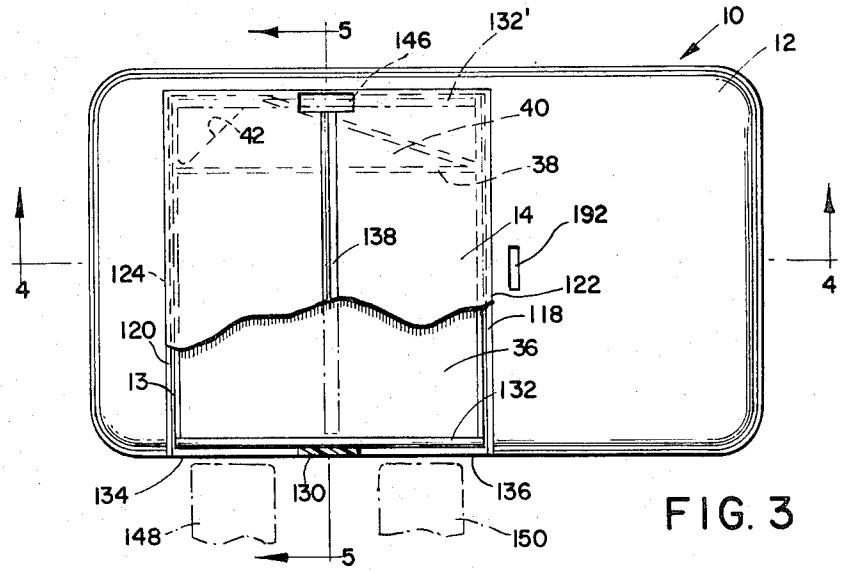


FIG. 3

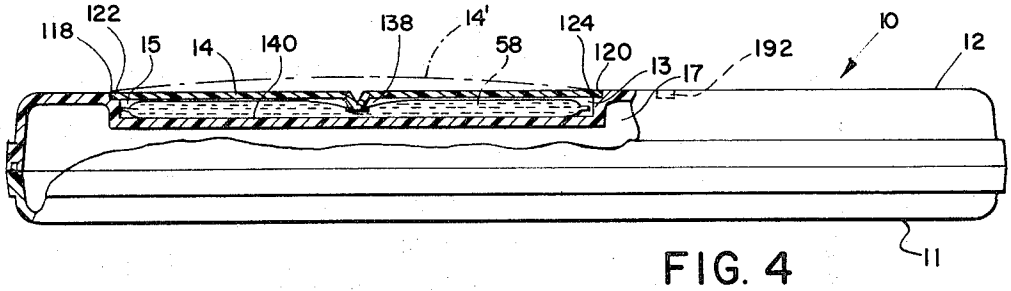


FIG. 4

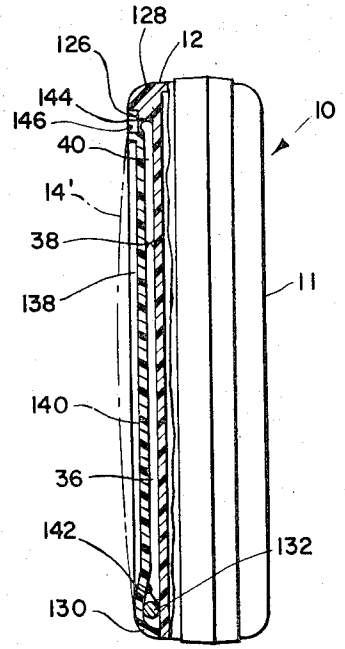


FIG. 5

# SYSTEM FOR RUPTURING POD CONTAINING PROCESSING FLUID FOR PHOTOGRAPHIC MATERIAL

This is a division of copending application Ser. No. 838,783, filed July 3, 1969, now U.S. Pat. No. 3,687,051.

## BACKGROUND OF THE INVENTION

1. Field of Invention

This invention relates to photography and, more particularly, to an improved system for rupturing a pod containing processing fluid for photographic material.

2. Description of the Prior Art

After motion picture film has been exposed in a camera, it has generally been the practice for the photographer to send the container of exposed film to a processing laboratory. At the laboratory the film is removed from the container and subjected to a series of operations in order to produce visible images from the images recorded thereon during the exposure operations. The fully developed film strip is then rewound onto a reel at the laboratory and returned to the user.

The extended delay normally incurred between the time exposed film is sent to the laboratory and returned ready for viewing has proved to be a significant inconvenience to the user and a source of great annoyance.

The field of still photography is no longer hampered by extensive periods of delay associated with the processing of exposed film. The impact on the public of the one-step photographic process employing diffusion transfer techniques is a matter of record and generally well known. The home still photographer can now enjoy the fruits of his efforts in a matter of seconds. This important convenience has been available to the amateur still photographer for many years.

Most recently, important technological advances have made it possible for the home photographer interested in motion pictures to enjoy this same convenience. Radically different systems have now been developed which permit the photographer himself to quickly and easily process and project a strip of motion picture film shortly after the pictures have been taken. Exemplary of such new and unique systems are those described in the following U.S. patents:

| Patent No. | Inventor(s) | Date Issued |
|---|---|---|
| 3,615,127 | Edwin H. Land | Oct. 26, 1971 |
| 3,597,062 | Rogers B. Downey | Aug. 3, 1971 |
| 3,537,784 | Rogers B. Downey | Nov. 3, 1970 |
| 3,623,417 | Vaito K. Eloranta<br>Benjamin C. Ruggles | Nov. 30, 1971 |
| 3,644,024 | Rogers B. Downey | Feb. 22, 1972 |
| 3,600,071 | Rogers B. Downey | Aug. 17, 1971 |
| 3,608,455 | Rogers B. Downey | Sept. 28, 1971 |
| 3,641,896 | Rogers B. Downey<br>Paul W. Thomas | Feb. 15, 1972 |
| 3,627,407 | Rogers B. Downey<br>Gerald H. Cook | Dec. 14, 1971 |
| 3,593,643 | Rogers B. Downey | July 20, 1971 |
| 3,641,909 | Philip G. Baker | Feb. 15, 1972 |
| 3,595,157 | Philip G. Baker<br>Gerald H. Cook<br>Rogers B. Downey | July 27, 1971 |

All of these patents are assigned to the assignee of the present invention. Each of the systems described in the aforementioned patents most advantageously employ a cassette from which the film need not be removed during exposure, processing and projection operations.

In commercial and industrial operations, such rapid motion picture processing systems are not only an improvement as a matter of convenience, but have other important effects as well. For instance, motion picture newsreel programs can be presented on television to the viewing public shortly after events of interest have occurred and been photographed.



In some of these new systems the processing fluid is initially stored in a dispensing container having an applicator, in some the processing fluid is initially stored in a frangible container from which it is later released into a reservoir of the cassette to facilitate the processing operation, while in still others the processing fluid is initially stored in a rupturable pod from which it can be expelled into an applicator at the proper time. Considerable funds and effort are currently being expended to further improve and refine various features of these systems in order to reduce their cost, to further simplify the task of the operator, to improve their reliability, and to improve the quality of the final product. The present invention is directed to an improved system for protecting a rupturable processing fluid containing pod, for subsequently rupturing that pod and for expelling the fluid therefrom. This improved system is particularly well suited for use in a compact multi-purpose film handling cassette devised for insertion into a unique processor-projector unit, the overall system being adapted for operation by the photographer himself.

One of the objects of this invention, therefore, is to provide an improved system for protecting a rupturable fluid containing pod from premature accidental rupture.

Another primary object of this invention is to provide an improved system for rupturing a fluid containing pod.

An additional object of this invention is to provide an improved system for incorporating a rupturable processing fluid containing pod into a film handling cassette.

Still another object of this invention is to provide an improved film handling cassette incorporating a rupturable processing fluid containing pod and means for selectively rupturing that pod.

Also, an object of this invention is to provide a cassette of the type mentioned incorporating means for indicating to the operator when the processing fluid containing pod has been ruptured.

A further object of this invention is to provide apparatus for receiving cassettes of the type indicated and for cooperating with the pod rupturing means thereof to effect a rupturing of the pod.

## BRIEF DESCRIPTION OF THE DRAWINGS

The novel features that are considered characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of the preferred embodiments when read in connection with the accompanying drawings wherein like numbers have been employed in the different figures to denote the same parts wherein:

FIG. 1 is a diagrammatic cutaway plan view of a compact multi-purpose motion picture film handling cassette embodying features of this invention;

FIG. 2 is a diagrammatic perspective view of the cassette illustrated in FIG. 1;

FIG. 3 is a diagrammatic cutaway plan view of the back face of the cassette of FIG. 1 illustrating the dis-

placeable rigid member incorporated in the cassette in its original position and the operable relationship between that member and externally mounted force applying means;

FIG. 4 is a view illustrating the manner in which the rupturable pod is mounted within the cassette taken generally along line 4—4 of FIG. 2;

FIG. 5 is a view illustrating the manner in which the rupturable pod and displaceable rigid member are initially mounted within the cassette taken generally along line 5—5 of FIG. 2;

FIG. 6 is a fragmentary diagrammatic plan view of the processor-projector unit embodying features of this invention illustrating the cassette of FIG. 1 positioned therein;

FIG. 7 is a fragmentary diagrammatic vertical view of the cassette receiving chamber of the processor-projector unit illustrated in FIG. 5 depicting the cassette of FIG. 1 about to be inserted thereinto;

FIG. 8 is a fragmentary diagrammatic sectional vertical view of an alternate embodiment of the cassette receiving chamber and pod rupturing means of the processor-projector unit of this invention illustrating the cassette of FIG. 1 mounted therein; and

FIG. 9 is a fragmentary view of the cassette of FIG. 1 mounted in the processor-projector unit of FIG. 8 taken along line 9—9 of FIG. 8.

## SUMMARY OF THE INVENTION

A preferred embodiment of this invention briefly comprises a support member provided with a recessed portion adapted to receive a rupturable processing fluid filled pod having a weakened portion. The rupturable pod may be generally rectangular in configuration and relatively flat when filled with the processing fluid, with the weakened portion comprising a seal along one end thereof. When mounted in the aforementioned recessed portion of the support member, one of the rectangular faces of the pod is seated against a support surface. A flexible cover plate is connected to the support plate so as to overlie the pod positioned within the recessed portion. This flexible cover plate includes a rib centrally positioned with respect to the pod and extending therefrom against the pod so that substantially no fluid is disposed within the pod between the rib and the support surface. This arrangement prevents premature accidental rupturing of the pod. The rib extends a distance along the cover plate intermediate opposed ends of that plate, one end of the rib being positioned adjacent the weakened seal of the pod. In applications where it is necessary to enhance the flexible nature of the cover plate, the rib may be V-shaped in configuration.

Intermediate the flexible cover plate and the support surface adjacent the end of the pod furtherest removed from the pod's weakened seal, there is initially positioned a circular rod which extends the width of the pod in a direction parallel to the weakened seal. This rod is adapted to be displaced along the pod intermediate the cover plate and the pod. In this respect, the end of the cover plate's rib adjacent the initial position of the rod within the recessed portion of the support plate is tapered to facilitate such displacement of the rod. The other end of the cover plate's rib terminates sharply so that, once the rod has been displaced along the length of the rib, this end of the rib serves to prevent any subsequent displacement of the rod within the recessed portion of the support plate.

The flexible cover plate includes openings adjacent the initial position of the displaceable rod to permit an externally mounted force applying means to be introduced between the cover plate and the support surface to effect the aforementioned displacement of the rod. As the rod is displaced across the pod, it is pressed firmly against the pod by the cover plate. In this connection the cover plate is deflected outwardly away from the pod by the rod and, if necessary, externally mounted restraining means may be positioned to limit the extent to which the cover plate is permitted to be deflected in a direction away from the pod. During its displacement, the rod first causes the pod to rupture and then the processing fluid to be expelled therefrom.

Visual access means are provided through the cover plate adjacent the final displaced position of the rod so that an operator can readily ascertain whether the pod contained within the recessed portion of the support plate has been ruptured by noting the position of the rod.

Most advantageously, this unique system for rupturing a fluid containing pod may be incorporated into a compact multi-purpose motion picture film handling cassette. Such a cassette may include coplanar supply and takeup spools to which respective ends of a strip of unexposed photographic material are fixed. Substantially the entire length of the unexposed photographic film strip is initially coiled around the supply spool and, in reaching the takeup spool, passes across an applicator and an exposure and projection station. The applicator communicates with the weakened seal of the rupturable pod so that when the processing fluid is expelled from the pod it is fed to the applicator. A light reflecting element is positioned within the exposure and projection station with the film strip passing through that station intermediate of that element and a film gate of the cassette.

This film handling cassette is adapted to be first mounted in a camera for exposure operations. During these operations, the processing station is inoperative and the photosensitive film strip is progressively drawn across the film gate onto the takeup spool. After the picture taking process has been completed, the cassette may be withdrawn from the camera, and inserted into a specially configured processor-projector unit. This unit includes a pair of arms adapted to enter the cassette through the openings provided in its flexible cover plate during the insertion process to displace the rod along the cassette's rupturable pod. Restraining means of the processor-projector unit limit the deflection of the cassette's flexible plate during this insertion and pod rupturing operation.

Drive means of the processor-projector unit first engage the cassette's supply spool to return the exposed film strip from the takeup spool to the supply spool. During this operation, the exposed film strip passes across the applicator and draws processing fluid therefrom to form a uniform coating of the fluid along its entire surface. Drive means of the processor-projector unit engaging the cassette's takeup spool may then be energized to return the processed film strip across the cassette's film gate in front of the light reflecting element to the takeup spool for projection operations.

In an alternate embodiment of the processor-projector unit adapted to receive the cassette described

above, the force applying members of that unit are initially disposed out of operable association with the cassette's displaceable rod when the cassette is first mounted in that unit. These force applying members are displaceably disposed within the processor-projector unit so that they may be subsequently selectively introduced into the cassette to effect a rupturing of the fluid filled pod.

In both of these embodiments of the processor-projector unit, an ejection spring is compressed by the cassette as it is introduced thereinto and a latch engages a recess of the cassette to retain the cassette therein against the force of that spring until it is desired to eject the cassette from that unit.

## DESCRIPTION OF A PREFERRED EMBODIMENT

A preferred embodiment of this invention is illustrated as facilitating the application of a compatible processing fluid to a film structure which comprises both a photosensitive image-recording layer and an image-receiving layer in which a visible image may be formed by image-forming substances transferred by diffusion from the photosensitive layer without necessitating the subsequent removal of the processed photosensitive layer. This highly desirable type of film structure is made possible by a developed negative image having low covering power.

In typical silver halide diffusion transfer-reversal processes for the production of black-and-white images, a silver halide developer and a silver halide solvent are applied in an aqueous alkaline solution to a photoexposed silver halide stratum or emulsion where they develop exposed silver halide to silver and react with unreduced silver halide to form a soluble silver complex. This complex, in order to form a positive print, is transferred and reduced to silver on a silver-receptive stratum upon which the silver halide stratum has been superposed. It has generally been the practice, in the completion of this process, to separate the silver-receptive and silver halide strata in order to render the positive image visible, particularly when it is to be viewed in transmitted light.

However, as indicated above, the positive print may be rendered visible without separation of the silver halide and silver receptive strata. For example, the silver receptive stratum may be so constituted as to provide an unusually vigorous silver precipitating environment which causes the silver deposited upon it, in comparison with silver developed in the silver halide stratum, to possess very high covering power, i.e., opacity for a given mass of reduced silver. If the silver halide is in such a concentration as to give rise only when fully developed to a predetermined low maximum density, and if the silver complex is reduced to silver in a vigorous silver precipitating environment, the resulting negative and positive images in superposition provide a composite that presents a good image for projection purposes as long as the images are carried on a light-transmitting support. Since the silver halide stratum and the silver receptive stratum need not be separated, a simplication of the overall silver halide diffusion transfer-reversal process is achieved.

A composite film assembly of this type as well as processing compositions for producing a stable black-and-white image which can be viewed by transmitted light without the necessity of removing the processed negative image-containing photosensitive layer is shown in prior U.S. Pat. No. 2,861,885 of Edwin H. Land which issued on Nov. 25, 1958. Other composite film assemblies capable of producing photographic records which can be exhibited in full color without the necessity of removing the processed photosensitive layer are shown in prior U.S. Pats. of Edwin H. Land U.S. Pat. Nos. 2,726,154 issued Dec. 6, 1955 and 2,944,894 issued July 12, 1960. All of these prior patents are assigned to the assignee of the present invention.

However, it should be noted that the present invention is not directed to the chemistry by which visible images are formed in an exposed photosensitive material and/or formed in an image receiving stratum associated therewith. While the illustrated preferred embodiments of the invention are shown effecting the application of a compatible processing fluid to a film structure not requiring the removal of the photosensitive layer after visible image formation is completed, the invention itself is also applicable for use with other types of processing fluids and film structures.

The illustrated preferred embodiments of this invention may best be understood by first referring to FIGS. **1** and **2** of the drawings. As may be seen therein, a compact multi-purpose film handling cassette **10** is basically constituted by a pair of housing members **11** and **12** connected together to form an enclosed opaque housing. The housing member **12** is provided with a recessed portion **13** and a cover plate **14** which in combination define an enclosed section **15** separated from the main section **17** of the cassette **10.**

Cut-out portions of the housing members **11** and **12** define an opening **18** through which image carrying light rays may enter and/or leave the cassette **10** and, further, through which an aperture plate of a camera or of a projector may be introduced into the cassette. In this embodiment, the cassette **10** is relatively flat and generally rectangular parallelepiped in configuration. A supply spool **20** and a takeup spool **22** are coplanarly mounted within section **17** of the cassette **10** for rotation about parallel axes. A strip of unexposed photographic material **24,** of the type previously discussed and provided with perforations **25** and leaders affixed to the supply spool **20** and to the takeup spool **22,** is initially substantially entirely coiled around the supply spool. Passing from the supply spool **20** to the takeup spool **22,** the strip of photographic material **24** sequentially travels around idlers **26, 28, 30, 32** and **34.** Advantageously, the idlers **30** and **32** are positioned in opposite corners or extremities of the cassette **10** on the same side of the supply spool **20** and the takeup spool **22.** Additionally, the idler **28** is advantageously positioned in the corner of the cassette **10** disposed on the other side of the supply spool **20** from the takeup spool **22** and on the opposite side of those spools from the idlers **30** and **32.**

A rupturable pod **36** is positioned in the section **15** of the cassette **10** adjacent the housing member **12.** The nature of this pod, the manner in which it is mounted in the section **15** of the cassette **10** and the means by which it is ruptured will be described in considerable detail hereinafter. However, at this point, it should be noted that this pod **36** includes a weakened seal **38** connected to a fluid feeding device **40** provided with an exit orifice **42.** This orifice **42** in turn communicates through an opening **44** in the housing member **12** with a fluid reservoir chamber **46** of a dispensing container **48.** Extending from the dispensing container **48**

is a rectangular projection **300** which defines an orifice through which processing fluid within the reservoir chamber **46** may be expressed from the dispensing container. One edge of the end of the projection **300** is formed with a taper **302**, the purpose of which will subsequently become obvious.

Guide tracks **304** and **306** are formed in an outside face of the dispensing container **48** for purposes of slidably receiving an actuator **308**. This actuator **308** is formed with a leaf spring **310**, which engages the inside face of the wall **64** of the cassette **10** to firmly seat the actuator in the guide tracks **304** and **306**, and further, with a tang **312** extending over and across the side of the dispensing container **48** from which the projection **300** extends. A circular aperture **314** in the actuator **308** is positioned in alignment with an elongated slot **316** passing through the cassette's wall **64** in order that an externally mounted force applying member may be received thereinto for purposes of effecting an upward displacement of the actuator along the guide tracks **304** and **306** from its position as shown in FIG. **1** of the drawings. One end of a strip of flexible material **328** is spring mounted to the structure of the cassette **10** while its other end is connected to the tang **312**. This strip of flexible material **328** is disposed over the end of the rectangular projection **300** and includes an opening (not shown) positioned to be out of alignment with the orifice of that projection when disposed in the position illustrated in FIG. **1** and so as to be in alignment with that orifice when the actuator **308** is displaced to its upwardmost position along the guide tracks **304** and **306**.

Additionally, a support plate **330** is pivotably connected between the ends of a uniquely configured U-shaped spring **332** mounted on the dispensing container **48**. It will be noted that this U-shaped spring **332** includes an offset **334** adapted to be engaged by the tang **312** when it is positioned as shown in FIG. **1**.

Intermediate the idlers **28** and **30**, the strip of photographic material **24** is disposed between and in spaced apart relationship to the strip of flexible material **328** and the support plate **330**. However, it will be appreciated that when the actuator **308** is displaced upwardly, the tang **312** is removed from contact with the offset **334** in the spring **332** thereby permitting the support plate **330** to slidably engage the strip of photographic material **24** against that section of the strip of flexible material **328** disposed across the projection **300**. Thus, when the actuator **308** is in its position as shown in FIG. **1**, the dispensing container **48** is sealed by the strip of flexible material **328** and the strip of photographic material **24** may be transported between and out of contact with that strip of flexible material and the support plate **330**. Also, whenever the actuator **308** is moved upwardly along the guide tracks **304** and **306**, the strip of flexible material **328** is displaced into an unsealing relationship with the dispensing container **48** and the support plate **330** slidably engages the strip of photographic material **24** against the strip of flexible material.

The rupturable pod **36** initially contains a quantity of processing fluid **58** (See FIG. **4**) suitable to form visible images from images recorded on the film strip **24** during exposure operations. This particular type of rupturable pod-fluid feeding device-dispensing container system is the subject of aforementioned U.S. Pat. No. 3,608,455. It should be noted that, in the preferred embodiment, the capacity of the reservoir chamber **46** of the dispensing container **48** is equivalent to or greater than that of the rupturable pod **36**. For instance, it has been found that approximately 2cc. of processing fluid is sufficient to treat **50** feet of Super-**8** format film. Under such conditions, the pod **36** would have a capacity of 2cc. and the capacity of the dispensing container's reservoir chamber **46** should be on the order of 2 to 2½ cc.

It will be appreciated that the application of a compressive force progressively along the length of the pod **36** towards its weakened seal **38** and across the fluid feeding device **40** will first effect a rupturing of the pod and then cause the processing fluid **58** to be expelled therefrom into the dispensing container's reservoir chamber **46**. Once the processing fluid **58** has been expelled into the reservoir chamber **46** and the actuator **308** displaced upwardly from its position shown in FIG. **1**, transport of the film strip in a direction from the takeup spool **22** to the supply spool **20** will cause the film strip to draw processing fluid from the dispensing container **48** to form a fluid coating therealong.

The thickness of the strip of flexible material **328** is determinative of the thickness of the fluid coating applied to the film strip **24** and the taper **302** provides a relatively sharp doctor blade for applying that coating to the film strip.

Mounted between the housing member **12** and a wall **64** of the housing member **11** is a light sealing arcuate member **66**, one end of which is positioned against the dispensing container **48**. The other end of the member **66** is connected to one end of a second light sealing arcuate member **68** which extends to within the vicinity of the idler **32**. These arcuate members **66** and **68**, in combination with the dispensing container **48**, serve to effectively divide the section **17** of the cassette **10** into a first compartment **70** sealed in a lighttight manner from a second compartment **72**. Additionally, it will be noted that in the illustrated preferred embodiment the supply spool **20**, the light sealing arcuate member **66** and a wall **74** of the dispensing container **48** share a common center of curvature. Thus the arcuate member **66** and the wall **74** further serve to control the disposition of that portion of the film strip **24** coiled around the supply spool **20** within the cassette **10**. Similarly, the takeup spool **22** and the light sealing arcuate member **68** share a common center of curvature and, consequently, the arcuate member **68** serves to control the disposition of that portion of the film strip **24** coiled around the takeup spool within the cassette **10**.

It should also be noted at this point that the wall **64** of the cassette **10** is provided with an opening **76** communicating with the aforementioned opening **18** of the cassette. As will subsequently become more apparent, this opening **76** permits light rays from an external light source to be introduced into the cassette **10** for film projection purposes.

As shown in FIG. **1**, a resilient member **78** is connected to the inside face of the wall **64** by any suitable means, such as rivets **80**, and extends over and in spaced relationship to the end surfaces **82** and **84** of the idlers **32** and **34**, respectively. Provided in the wall **64** is an aperture **86** disposed over the resilient member **78** whereby an external force applying member may be selectively introduced into the cassette **10** to urge the resilient member's end portions **88** and **90** into frictional engagement with the idlers **32** and **34**, respectively, to restrain further rotational movement of those idlers. In

order to effectively light seal the interior of the cassette **10**, a ring **92** mounted on the resilient member **78** is coaxially disposed with respect to the aperture **86** and adapted to seat in an annular recess **94** of the wall **64**.

Mounted within compartment **72** of the cassette **10** so as to be in alignment with the opening **18** is a pressure plate assembly **96** in which is mounted a light reflecting element **98**. It will be noted that this light reflecting element **98** is disposed in operable relationship to both the opening **18** and the opening **76** of the cassette **10**. In the preferred embodiment, the light reflecting element **98** is prismatic in nature and includes a concave light receiving transparent face **100** and a flat reflecting surface **102** which reflects light received into the element through the light receiving face **100** outwardly thereof through a convex transparent face **104**.

The pressure plate assembly **96** includes a leaf spring **106** which seats against a boss **108** formed integrally with the housing member **12** to continually urge the pressure plate assembly towards the cassette's opening **18**. The pressure plate assembly **96** is mounted within the cassette **10** so that it may be displaced inwardly of the cassette from the opening **18** when the aperture plate of a camera or a projector is positioned in operative relationship therewith. Forming part of the pressure plate assembly **96** is a mounting bracket **110** which serves to fixedly position the light reflecting element **98** with respect to the pressure plate assembly and, more particularly, with respect to an aperture **112** of that assembly. While the particular form of pressure plate assembly **96** and light reflecting element **98** do not constitute part of the present invention, they may advantageously take the form of the pressure plate assembly described in the aforementioned U.S. Pat. No. 3,627,407 and of the light reflecting element described in the copending application Ser. No. 767,609 of Herbert A. Bing filed Oct. 15, 1968, now abandoned and replaced by Ser. No. 118,936 filed Sept. 25, 1971.

The spools **20** and **22** are respectively provided with fluted recesses **114** and **116** which are adapted to receive externally mounted drive means through apertures **115** and **117** appropriately provided through the cassette's wall **64**. Thus the cassette **10** includes means for reversibly transporting the strip of photographic material **24** between the supply spool **20** and the takeup spool **22** across the dispensing container's projection **300** and the pressure plate assembly **96**. The cassette's opening **18** constitutes a film gate adapted to serve as an exposure station during a first pass of the photosensitive film strip **24** across the pressure plate assembly **96** and as a projection station during subsequent operations in which the film strip, in a fully processed condition, is advanced from the supply spool **20** to the takeup spool **22**.

Idler **30**, around which the film strip **24** passes on its way from the supply spool **20** to the pressure plate assembly **96** may, if desired, be mounted on a movable post spring biased toward the corner which it occupies in the housing of the cassette **10** and capable of being moved resiliently inward away from that corner. Also, idler **32** may be spring biased toward the corner which it occupies in the housing of the cassette **10** and capable of being moved resiliently inward away from that corner. This represents one way to minimize strain exerted on the film strip **24** by the conventional intermittent film advancement structure during these exposure and projection operations.

Referring now to FIGS. **3, 4** and **5**, it will be seen that the housing member **12** is provided with a pair of channels **118** and **120** adjacent respective sides of its recessed portion **13** which are adapted to receive opposed edges **122** and **124**, respectively, of the flexible cover plate **14**. Additionally, the housing member **12** is provided with a channel **126** adapted to receive the cover plate's edge **128**. The other end **130** of the cover plate **14** curves around the adjacent edge of the rupturable pod **36** to seat against the frame member **12**. A displaceable rigid member **132**, which may be a circular bar or rod formed of a metal such as stainless steel, is initially positioned between the end **130** of the cover plate **14** and the frame member **12** adjacent the rupturable pod **36**. The end **130** of the plate **14** includes a pair of openings **134** and **136**, which in the illustrative embodiment are formed by corner cut-outs in that end of the plate, for a purpose which will subsequently become obvious. This plate **14** is formed with a V-shaped rib **138** extending from its inside face so as to initially bear against the pod **36** to displace the processing fluid **58** contained therein towards the opposed ends thereof away from the rib **138**. Preferably the height of this rib **138** is such that substantially no processing fluid is initially disposed between that member and the support surface **140** of the housing member **12**. Since the cover plate **14** is flexible, this arrangement prevents premature accidental rupturing of the pod **36** responsive to an external force bearing against the outside face of the cover plate. Alternately, the opposed walls of the pod **36** may be sealed together along a section thereof against which the rib **138** is adapted to initially seat.

It will be appreciated that the housing members **11** and **12**, as well as various elements associated therewith, e.g., the light sealing members **66** and **68** and the boss **160**, may, for example, be formed from a suitable thermoplastic resin, such as an acrylic or a polystyrene, in inexpensive injection molding processes. Similarly, the dispensing container **48** and the cover plate **14** may be formed by injection molding processes employing the same types of material. In order to facilitate the flexible nature of the cover plate **14**, its edges **122** and **124** may be affixed to the housing member **12**, as by ultrasonic welding, while its edge **128** and end **130** merely initially seat against the housing member **12**. In the embodiment illustrated, the rib **138** is V-shaped thereby further facilitating the flexing of the cover plate **14** in a direction away from the pod **36**. Obviously, in many applications the flexible characteristic of the material from which the cover plate **14** is formed will be adequate and the rib **138** need not be V-shaped. In such instances, the outside face of the cover plate **14** may present a continuously flat surface.

It will be noticed that one end of the V-shaped rib **138** is formed with a taper **142** while its other end **144** terminates in a sharp right angle turn. Additionally, the cover plate **14** has an aperture **146** passing therethrough adjacent the end **144** of the V-shaped rib **138**. This aperture **146** provides visible access to the operator into the interior of the cassette's recessed portion **3**. The purposes for these features will subsequently become apparent.

The rupturable pod **36** and the fluid feeding device **40** connected thereto may be formed of any suitable materials. Typically, the walls of the rupturable pod **36** may consist of an outer layer of pouch or glassine paper, an intermediate layer of lead foil and an inner liner

of polyvinylchloride material. The polyvinylchloride liners may be bonded together adjacent their edge portions to effect the sealing of the fluid filled cavity with the seal **38** being substantially weaker than the seals around the other edges of the pod **36.** Typically, the walls of the fluid feeding device **40** may be formed of an outer layer of pouch or glassine paper bonded to an inner layer of polyethylene material. Again the polyethylene material layers may be bonded together where appropriate and also bonded to the outer layer of the walls of the pod **36** to connect the fluid feeding device to the pod. Preferably the outside surface of the assembly comprising the pod **36** and fluid feeding device **40** adjacent the support surface **140** is adhered thereto by any suitable means to fixedly position that assembly within the recess **13.**

It will thus be appreciated that a pair of force applying arms **148** and **150** (see FIG. 3) may be introduced into the section **15** of the cassette **10** through the openings **134** and **136,** respectively, in the cover plate **14** so as to engage the rod **132** and to displace it from its original position, as shown in FIG. **3,** along the assembly comprising the rupturable pod **36** and the fluid feeding device **40** to its position shown in phantom in that figure of the drawings. In the course of such a displacement of the rod **132,** the taper **142** of the rib **138** facilitates the movement of the rod onto the rib, while the sharply angled configuration of the other end **144** of the rib serves to fixedly position the rod within the recess **13** once it has been displaced from its initial position to its position shown in phantom in FIG. **3.** As the rod travels along the pod **36** and the fluid feeding device **40,** the cover plate **14** is deflected from its initial position to its position shown in phantom in FIGS. **4** and **5** of the drawings. At the same time, the resilient force of the flexible cover plate **14** serves to firmly press the rod **132** against first the pod **36** and then the fluid feeding device **40.** In some applications this force will be insufficient by itself to effect a rupturing of the pod **36.** Under such circumstances a restraining member may be positioned adjacent and in carefully spaced relationship to the outside face of the flexible cover plate **14.** Such a restraining member serves to preclude the rod **132** from deflecting the plate **14** greater than a predetermined distance away from the pod **36** whereby the rod presses against the pod with sufficient force to rupture the pod and to cause the fluid **58** to be expelled therefrom into the reservoir chamber **46.**

After the strip of photographic material **24** has been exposed with the cassette **10** mounted in an appropriate camera (not shown) during its travel from the supply spool **20** onto the takeup spool **22,** it is preferably processed and projected with the cassette mounted in a specially devised processor-projector unit **152** diagrammatically illustrated in part in FIGS. **5** and **6** of the drawings. As shown therein, the unit **152** includes a cassette receiving chamber **154** formed of interconnected support plates **156, 168, 160, 162** and **164.** A plurality of elongated standoffs **166** mounted on the aforementioned support plates and extending from those plates interiorly of the cassette receiving chamber **154** serve to first guide the cassette **10** into that chamber and, once the cassette has been fully inserted thereinto, to support and align the cassette. Typically, the support plates **156, 158, 160, 162** and **164** are formed from a material such as stainless steel while the elongated standoffs **166** are formed from a polymeric material such as polytetrafluoroethylene.

Preferably, the cassette receiving chambers **154** is oriented within the processor-projector unit **152** so that the cassette **10** is inserted vertically downward thereinto (as viewed in FIGS. **6** and **7**) through a slot (not shown) in the top panel **168** of that unit.

A pair of rigid arms **172** and **174,** which may be formed integrally with the support plate **162,** extend from the support plate **162** and curve upwardly into parallel relationship therewith. These arms **172** and **174** are positioned and configured to pass under a portion of the cassette **10** and into the openings **134** and **136,** respectively, of the cassette's cover plate **14** when the cassette is fully inserted into the processor-projector unit **152.** The length of these arms **172** and **174** is such that when the cassette has been seated against the standoffs **166** attached to the support plate **164,** they have effected a displacement of the rod **132** from its initial position within the cassette to its position shown therein in phantom in FIGS. **3** and **7.** The position of the arms **172** and **174** within the cassette **10** after the cassette has been fully inserted into the receiving chamber **154** of the processor-projector unit **152** is shown in phantom in the illustration of the cassette in FIG. **7.**

A roller **176** is mounted from the support plate **158** so as to engage the outside face of the cassette's housing member **11** as the cassette **10** is inserted into the processor-projector unit's receiving chamber **154.** The mounting arrangement for this roller **176** precludes displacement of the roller in a right or left handed direction as viewed in FIG. **6** of the drawings. Connected to the support plate **162** is a leaf spring **178** which extends over a cut-out portion **182** of that support plate and on which is mounted a second roller **180.** The leaf spring **178** is initially seated against the outside face of the support plate **162** with the roller **180** extending through the cut-out portion **182** of that plate. These rollers **176** and **180** are positioned in vertical alignment with each other and the ends of the arms **170** and **172,** with the initial spacing therebetween being slightly greater than the distance between the outside faces of the cassette's cover plate **14** and housing member **11.** As the cassette **10** is inserted into the processor-projector unit **152,** the arms **172** and **174** effect a progressive displacement of the rod **132** across the rupturable pod **36** and the fluid feeding device **40** in the course of which displacement the cover plate **14** is deflected by the rod away from the pod **36.** In deflecting, the cover plate **14** engages the peripheral surface of the roller **180** and effects a displacement of that roller in a left handed direction as viewed in FIG. **5** against the force exerted thereon by the spring **178.** The strength of the spring **178** is such that the rod **132** is pressed against the pod **36** and fluid feeding device **40** with sufficient force to effect a rupturing of the pod's weakened seal **38** and to expell the processing fluid **58** from the pod into the dispensing container's reservoir chamber **46.** Also, the spring **178** is designed so that it will exert a substantially constant force on the cassette's cover plate **14** regardless of the extent to which it is displaced by the cover plate. This arrangement, in combination with a rib **138** of substantial height, accommodates for acceptable manufacturing tolerances associated with the production of the cassette. More specifically, the fact that the rib **138** has a substantial height imparts a substantial amount of de-

flection to the cover plate **14** as the rod **132** is displaced within the cassette **10** and the initial positions of the rollers **176** and **180** permits cassettes of slightly varying thicknesses to be inserted therebetween. Thus, a predetermined force is exerted against pod **36** even though there may be slight differences between the thicknesses of the cassette **10** in which they are housed. During the deflection of the cover plate **14**, the roller **176** serves to support the cassette's frame member **11** so that it is not distorted by the forces associated with the displacement of the rod **132**. These rollers **176** and **180** may be formed of any suitable material such as nylon or hard rubber.

Extending through the processor-projector unit's support plate **164** is a telescoping container **184** comprising a first section **186** fixedly mounted to the support plate **164** and a second section **188** slideably disposed through the support plate **164**. A compression spring **190** housed within the container **184** continually urges the two sections **186** and **184** of that container into their fully extended positions as shown in FIG. **7**. Spring mounted from the processor-projector unit's support plate **162** and extending through an opening **194** therein, is a latch **196**. This latch **196** is adapted to seat in a recess **192** provided in the outside face of the cassette's housing member **12** when the cassette **10** is fully inserted into the receiving chamber **154**. The spring **193** terminates in a finger portion **198** which may be selectively engaged by conventional means (not shown in these figures of the drawing) extending through the processor-projector unit's top panel **168** to displace the spring in a direction away from the support plate **162** so that the latch **196** is disengaged from the cassette's recess **192**.

It will thus be appreciated that the cassette **10** is inserted into the processor-projector unit's receiving chamber **154** against the force of the compression spring **190** causing the first section **186** of the telescoping container **184** to be displaced inwardly of the container's second section **188**. Once the cassette **10** has been fully seated in the receiving chamber **154** of the processor-projector unit **152**, the latch **196** enters the cassette's recess **192** to restrain the cassette in that unit against the force of the compressed spring **190**. When the operator causes the spring **193** to be displaced in a direction away from the support plate **162**, the latch **196** is withdrawn from the recess **192** and the spring **190** will eject the cassette **10** from the processor-projector unit **152**. It is preferred that this spring **190** be configured to displace the cassette **10** upwardly within the receiving chamber **154** to a position where it is easily accessible for manual removal from the unit **152**, rather than to actually propel the cassette from that unit. However, it is to be understood that as used herein the terms "ejecting", "ejection", etc. are employed in a broad sense, i.e., to cover either of these situations.

## OPERATION OF THE PREFERRED EMBODIMENT

To summarize the operation of the preferred embodiment of this invention, the cassette **10** is initially furnished with substantially all of the film strip **24** in an unexposed condition coiled on the supply spool **20**, the processing fluid **58** retained in the rupturable pod **36**, the rod **132** disposed in its position shown in FIG. **5** of the drawings and with the film strip **24** positioned intermediate of, and is spaced relationship to, the projection **300** and the support plate **330** (See FIG. **1**). For exposure purposes, the cassette **10** is mounted in an appropriate camera (not shown) with the drive means of the camera engaging the recess **116** of the takeup spool **22** through a friction clutching arrangement as is conventional. While the particular camera employed does not form part of the present invention, it may advantageously take the form of that described in the aforementioned U.S. Pat. No. 3,600,071. It will be noted that the camera described in that application includes a door mounted pin which automatically enters the cassette **10** through its aperture **86** to snub the idlers **32** and **34** whenever the cassette is mounted therein. The aperture plate of the camera, which may also take a conventional form, operably engages the cassette's pressure plate assembly **96** to position the section of the film strip **24** disposed thereacross in the proper focal plane. Also, a conventional intermittent film advancement mechanism of the camera engages the perforations **25** of the film strip **24** to effect proper step advancement of the film strip along tthe pressure plate assembly **96**. In this manner, the operator can selectively record images on the photosensitive film strip **24** as it traverses the cassette's opening **18** on its way from the supply spool **20** to the takeup spool **22**. In the embodiment illustrated, the photosensitive surface of the film strip **24** faces inwardly of the cassette **10** such that exposure of the photosensitive emulsion is effected through the transparent film base. After the film strip **24** has been completely exposed, the cassette **10** can be quickly removed from the camera and replaced, when desired, by an identical cassette containing unexposed film.

The cassette **10** is now ready to be inserted into the unit **152** for processing and projection operations. During the process of inserting the cassette **10** into the processor-projector unit **152**, the arms **172** and **174** of that unit automatically effect a displacement of rod **132** across the pod **36** and the fluid feeding device **40** resulting in a rupturing of the pod, the processing fluid **58** initially retained therein being expelled therefrom through the fluid feeding device into the dispensing container's reservoir chamber **48**. When the cassette has been seated against the standoffs **166** extending from the processor-projector unit's support plate **164**, the latch **196** engages the cassette's recess **192** to restrain the cassette in the processor-projector unit **152** against the force exerted thereon by the telescoping container **184**.

At this time a pin (not shown) of the processor-projector unit **152** is caused to be inserted into the cassette **10** through the elongated slot **316** to engage the circular aperture **314** of the actuator **308** and to displace that actuator into its position wherein the strip of flexible material **328** is disposed in an unsealing relationship to the dispensing container **48** and the support plate **330** engages the strip of photographic material **24** against the strip of flexible material. Also, at this time the fluted recesses **114** and **116** of the cassette's supply spool **20** and takeup spool **22**, respectively, are engaged by drive shafts **400** and **402** (See FIG. **6**) slidably mounted in the processor-projector unit **152**. These shafts **400** and **402** are connected in a conventional manner to a motor (not shown) in order to facilitate selective reversible transport of the film strip **24** between the supply spool **20** and the takeup spool **22**. As is conventional, the drive shaft which engages the takeup

spool 22 is connected to the motor through a friction clutching arrangement. By now turning an appropriate switch, located on the control panel (not shown) of the processor-projector unit 152, the exposed strip of material 24 is returned from the takeup spool 22 to the supply spool 20. During this sequence, the exposed photographic film strip 24 passes across the rectangular projection 300 and draws processing fluid 58 from the dispensing container 48 to form a uniform fluid coating along its entire length. In this respect, it will be noted that, with the cassette 10 inserted into the unit 152, the projection 300 is disposed at the lowermost point of the dispensing container 48 and the force of gravity causes processing fluid 58 to be continually fed towards the film strip 24 from the reservoir chamber 46.

The motor of the processor-projector unit 152 is automatically de-energized by conventional means (not shown) as soon as the entire length of exposed film strip 24 has been drawn across the projection 300 onto the supply spool 20. At this time, the pin of the processor-projector unit 152 engaging the cassette's actuator 308 should be withdrawn from the cassette 10 to permit the film strip 24 to return to a position where it is disposed out of contact with the strip of flexible material 328 and the support plate 330 and the strip of flexible material once again seals the dispensing container 48. Additionally, the operator should now effect a snubbing of the cassette's idlers 32 and 34. This may be accomplished by displacing a pin (not shown) mounted in the processor-projector unit adjacent the cassette's aperture 86 into engagement with the cassette's resilient member 78.

The processor-projector unit 152 also includes other conventional means not illustrated in the drawings associated with the projection of the visible images recorded on the fully processed film strip 24. These include an aperture plate and an intermittent film advancement mechanism positioned in operable relationship to the cassette's pressure plate assembly 96 through the cassette's opening 18 and a light source positioned in operable relationship to the cassette's opening 76. Additionally, such other conventional means include a shutter mechanism and a lens system. By now turning another switch located on the control panel of the processor-projector unit 152, that unit's light source and motor are simultaneously energized, in this instance the motor driving both the aforementioned intermittent film advancement mechanism of the unit 152 and the takeup spool 22 of the cassette 10. As the now fully processed film strip 24 is once again drawn across the cassette's opening 18 onto the takeup spool 22, visible images contained thereon are projected for viewing purposes. In this connection, the processor-projector unit's aperture plate acting against the cassette's pressure plate assembly 96 accurately positions the section of film strip 24 disposed therebetween at the proper film plane for projection purposes. Simultaneously, light rays from the light source of the processor-projector unit 152 enter the cassette 10 through its opening 76 and are redirected by the light reflecting element 98 through the aperture 112 in the pressure plate assembly 96 and the sections of the film strip 24 intermittently positioned thereover outwardly of the cassette through its opening 18. Again, conventional means (not shown) automatically de-energize the light source and motor of the processor-projector unit 152 once the visible images on the entire processed film strip 24 have been projected.

Preferably, the film strip 24 is returned from the takeup spool 22 to the supply spool 20 before removing the cassette 10 from the processor-projector unit 152. Removal of the cassette 10 from the processor-projector unit 152 is effected by deflecting the spring 193 so that the latch 196 connected thereto is disengaged from the cassette's recess 192. Once the latch 196 is removed from the recess 192, the force of the telescoping container 184 acting against the cassette 10 automatically ejects the cassette from the processor-projector unit 152.

The cassette 10 may be stored in this condition until it is once again desired to view the fully processed film strip 24 retained therein. In this respect, the operator may readily determine whether the film strip 24 within a particular cassette 10 has been processed. As previously indicated, if the rod 132 is visible through the aperture 146 in the cassette's cover plate 14, the film strip 24 within the cassette has been processed. Advantageously, the cassette's pod 36 and cover plate 14, and the rod 132 have sharply contrasting colors. For instance, the pod 36 and plate 14 may be black and the rod yellow. It will thus be quickly apparent to the operator when the rod 132 within a particular cassette 10 has been displaced to effect a rupturing of the pod 36 contained therein.

Editing of the developed film strip 24 can easily be effected. It is only necessary to draw a loop of the film strip 24 from the cassette's opening 18 and to remove sections therefrom or to splice sections thereinto as desired.

## DESCRIPTION OF AN ALTERNATE EMBODIMENT

An alternate embodiment of the means for effecting a displacement of the rod 132 within the cassette 10 is illustrated in FIGS. 7 and 8 of the drawings. The same numerals primed are employed in those figures to denote parts of that embodiment which remain substantially unchanged from the embodiment illustrated in other figures of the drawings.

Referring now to FIGS. 8 and 9, a cassette 10′ is shown fully inserted into the cassette receiving chamber 154′ of a processor-projector 152′. In this particular unit 152′, the cassette receiving chamber 154′ is, in part, formed by a support member 200, a portion 202 of which extends below the receiving chamber. Mounted from the inside face of the support member 200 and its extended portion 202 are a pair of spaced apart parallel guide members 204 and 206 between which another plate 208 is slideably disposed. A pair of rigid arms 210 and 212, which may be formed integrally with the plate 208, extend from that plate into parallel relationship therewith. Mounted on the plate 208 and extending in parallel relationship to, and intermediate of, the arms 210 and 212 is a rack 214. This rack 214 is engaged by a pinion 216 driven by a motor 218. A normally opened switch or button 220, accessible to the operator of the processor-projector unit 152, is connected in series with the motor 218 and a power source 222 of the processor-projector unit 152′. Also connected in series with the power source 222 and the motor 218 of the processor-projector unit 152′ is a normally closed switch 224.

As shown in FIG. 8, a spring mounted button 226 is mounted through the processor-projector unit's top panel 168' so as to be in alignment with the finger portion 198' of the latch 196'. This arrangement is identical to that mentioned but not illustrated in connection with the other embodiment of this invention. It permits the latch 196' to be selectively displaced out of the cassette's recess 192' to permit the telescoping container 184' to eject the cassette 10' from the processor-projector unit 152'.

It will thus be appreciated that the cassette 10' may be inserted into the receiving chamber 154' of the processor-projector unit 152' free from interference with the arms 210 and 212 (see FIG. 8). In this arrangement, it is not necessary to overcome the force required to rupture the pod 36' during the cassette insertion process. During this insertion process, the section 188' of the telescoping container 184' is displaced into the container's section 186' against the force of the spring 190'. When the cassette is fully inserted into the processor-projector unit 152', the latch 196' enters the cassette's recess 192' to restrain the cassette in that unit against the force of the spring 190'.

By closing the switch 220, the operator may effect a rupturing of the pod 36'. In this connection, the pinion 216 attachd to the motor 218 drives against the rack 214 so that the arms 210 and 212, which are mounted on the same plate 208 as the rack, are introduced into the cassette 10' through the openings 134' and 136', respectively, in the cassette's cover plate 14'. The arms 210 and 212 effect a displacement of the rod 132' across the pod 36' and the fluid feeding device 40'. This embodiment also includes rollers (not shown) identical in form and function to rollers 176 and 180 described in connection with the first embodiment of the invention.

It will be noted that a pin 228 extends from the rear face of the plate 208 through an appropriate opening in the support plate 202 and is positioned on that plate 208 so as to trip the switch 224 at such time as the rod 132' has been displaced to its final position within the section 15' of the cassette 10'. The uppermost position of the pin 228 is shown in phantom in FIG. 8 wherein the pin is designated 228'. When the switch 224 is tripped, the weight of the plate 208 and of the arms 210 and 212 and the rack 214 attached thereto automatically returns the plate 208 to its original position within the processor-projector unit 152' along guide members 204 and 206. When desired the operator may eject the cassette 10' from the processor-projector unit 152' by depressing the spring mounted button 226.

Those familiar with the motion picture arts will readily appreciate the novel and highly unique advantages of this invention. Most importantly, a processing fluid containing pod and means for rupturing that pod are permanently housed under a cover plate which prevents premature accidental rupturing of the pod and permits an external force applying member to actuate the pod rupturing means.

The term "projector" is used herein in a comprehensive sense, i.e., to broadly refer to those systems wherein the visible images recorded on a sheet of material are re-imaged for viewing purposes and is not restricted to only those systems in which the recorded visible images are projected onto a screen of one type or another.

This invention may be practiced or embodied in still other ways without departing from the spirit or essential character thereof. The preferred embodiments described herein are therefore illustrative and not restrictive, the scope of the invention being indicated by the appended claims and all variations which come within the meaning of the claims are intended to be embraced therein.

We claim:

1. Apparatus for initially storing a fluid filled container and subsequently expelling such fluid therefrom, such container having a portion adapted to release such fluid in response to a predetermined hydraulic pressure developed in such fluid when pressure is applied to the exterior of such container, comprising:

a support surface adjacent which such container is positioned;

a force applying member initially positioned adjacent an extremity of such container spaced from such portion thereof and adapted to be displaced across such container toward such portion on the opposite side of such container from said support surface; and

means, including a flexible cover plate, for protecting such container from premature accidental release of such fluid and for urging said force applying member against such container as said force applying member is displaced across such container intermediate said container protecting means and such container, said cover plate including a rib extending from the face thereof adjacent such container and extending along said cover plate in the direction of the displacement of said force applying member across such container, whereby said force applying member causes said cover plate to deflect and is pressed by said rib against such container as said force applying member is displaced across such container.

2. The apparatus of claim 1 wherein said rib is configured to initially bear against such container to displace such fluid in opposite directions within such container away from said rib without releasing such fluid therefrom, whereby said rib engages such container against said support surface with substantially no such fluid interposed between said rib and said support surface so that said cover plate effectively prevents premature release of such fluid responsive to an external force bearing against said cover plate.

3. The apparatus of claim 1 wherein said rib presents an edge surface substantially parallel to said support surface extending a distance intermediate the distance said force applying member is adapted to be displaced with respect to said support surface, said force applying member being initially positioned between said support surface and one portion of said cover plate extending beyond said edge surface of said rib, said force applying member causing said cover plate to deflect in a direction away from such container as it is displaced along such container and said force applying member being positioned between said support surface and the other portion of said cover plate extending beyond said edge surface of said rib after being displaced across such container.

4. The apparatus of claim 3 wherein the end of said rib adjacent said one portion of said cover plate is configured to facilitate the displacement of said force applying member from its said initial position into contact

with said edge surface of said rib and the end of said rib adjacent said other portion of said cover plate is configured to preclude subsequent displacement of said force applying member into contact with said edge surface of said rib after said force applying member has been displaced along said rib into its said position between said other portion of said cover plate and said support surface.

5. The apparatus of claim 4 wherein said rib is V-shaped and formed integrally with said cover plate to facilitate the flexing of said cover plate as said force applying member is displaced therealong.

6. The apparatus of claim 2 wherein said rib is V-shaped and formed integrally with said cover plate to facilitate the flexing of said cover plate as said force applying member is displaced therealong.

7. The apparatus of claim 1 additionally including means for indicating when such fluid has been expelled from such container.

8. The apparatus of claim 1 additionally comprising means for indicating when such fluid has been expelled from such container.

9. The apparatus of claim 8 wherein said indicating means includes means for providing visual access through said cover plate adjacent the final position to which said force applying member is adapted to be displaced between said cover plate and said support surface.

10. Apparatus for initially storing a fluid filled container and subsequently expelling such fluid therefrom, such container having a portion adapted to release such fluid in response to a predetermined hydraulic pressure developed in such fluid when pressure is applied to the exterior of such container, comprising:

a support surface adjacent which such container is positioned;

a force applying member initially positioned adjacent an extremity of such container spaced from such portion thereof and adapted to be displaced across such container toward such portion on the opposite side of such container from said support surface;

means including a flexible cover plate, for protecting such container from premature accidental release of such fluid and for urging said force applying member against such container as said force applying member is displaced across such container intermediate said container protecting means and such container; and

means for restraining the deflection of said cover plate in a direction away from such container during the displacement of said force applying member across such container.

11. The apparatus of claim 10 additionally comprising means for progressively supporting said support surface on the opposite side thereof from such container and substantially in alignment with said force applying member as said force applying member is displaced along such container.

12. The apparatus of claim 10 wherein said restraining means comprises a roller adapted to engage said cover plate on the opposite side of said cover plate from, and substantially in alignment with, said force applying member as said force applying member is displaced along said cover plate.

13. The apparatus of claim 12 wherein said roller is resiliently urged against said cover plate.

14. The apparatus of claim 12 wherein said restraining means and said progressively supporting means comprise a pair of rollers mounted for rotation about parallel axes.

15. The apparatus of claim 14 wherein said restraining means roller is resiliently urged against said cover plate and the axis of rotation of said progressively supporting means is substantially parallel to and mounted in a fixed spaced relationship to said support surface during the displacement of said force applying member across such container.

16. The apparatus useful for precluding premature accidental release of fluid from a container adapted to release such fluid therefrom responsive to pressure being applied to the exterior thereof, comprising:

a support surface against which such container is positioned; and

a flexible cover plate overlying such pod including a rib extending from the face thereof adjacent such container to initially bear against a limited intermediate portion of such container without causing such fluid to be expelled therefrom, whereby said rib engages such container against said support surface with substantially no such fluid interposed between said rib and said support surface, said cover plate being deflectible in a direction away from such container to facilitate the introduction of a force applying member intermediate said rib and such container.

17. The apparatus of claim 16 wherein said rib is formed integrally with said cover plate and is V-shaped to facilitate the flexible characteristic of said cover plate.

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