United States Patent

Downey et al.

[15] **3,643,579**

[45] **Feb. 22, 1972**

[54] MOTION PICTURE PROCESSING SYSTEM

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[22] Filed: **Dec. 29, 1969**

[21] Appl. No.: **888,604**

[52] **U.S. Cl.** .....**95/89 R**, 95/90.5, 352/78

[51] **Int. Cl.** **G03d 3/00**

[58] **Field of Search** .....95/89 R, 90.5, 14; 352/78

[56] **References Cited**

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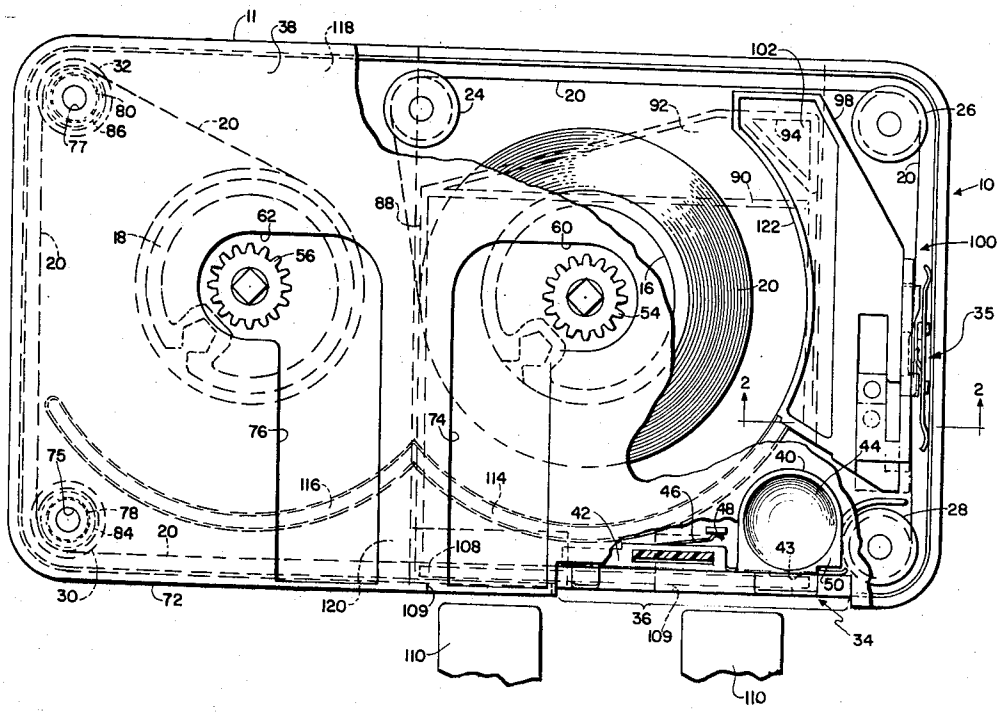
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[57] **ABSTRACT**

An applicator system particularly useful in a compact motion picture film-handling cassette and which includes a dispensing container having a reservoir chamber for retaining processing fluid with an orifice provided therethrough. A slider displaceably mounted for movement along the dispensing container includes a frame portion across which a strip of flexible material is mounted to overlay the container's orifice. An opening is provided through the strip of flexible material to be out of alignment with the orifice when the slider is in its initial position, to be aligned with the orifice when the slider is in a second position and to once again be out of alignment with the orifice when the slider is in a third position. A leaf spring carried by the slider continually urges a pressure plate towards the strip of flexible material. The filmstrip is progressively advanced across the orifice intermediate the strip of flexible material and the aforementioned pressure plate. When the slider is in its initial and third positions, guide tracks on the dispensing container position the pressure plate in spaced-apart relationship to the filmstrip. These guide tracks are configured such that, when the slider is in its second position, the pressure plate slideably engages the filmstrip against the flexible material. Cooperating portions of the slider and the dispensing container engage one another to preclude further movement of the slider once it has been displaced into its third position.

39 Claims, 7 Drawing Figures



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SHEET 1 OF 3

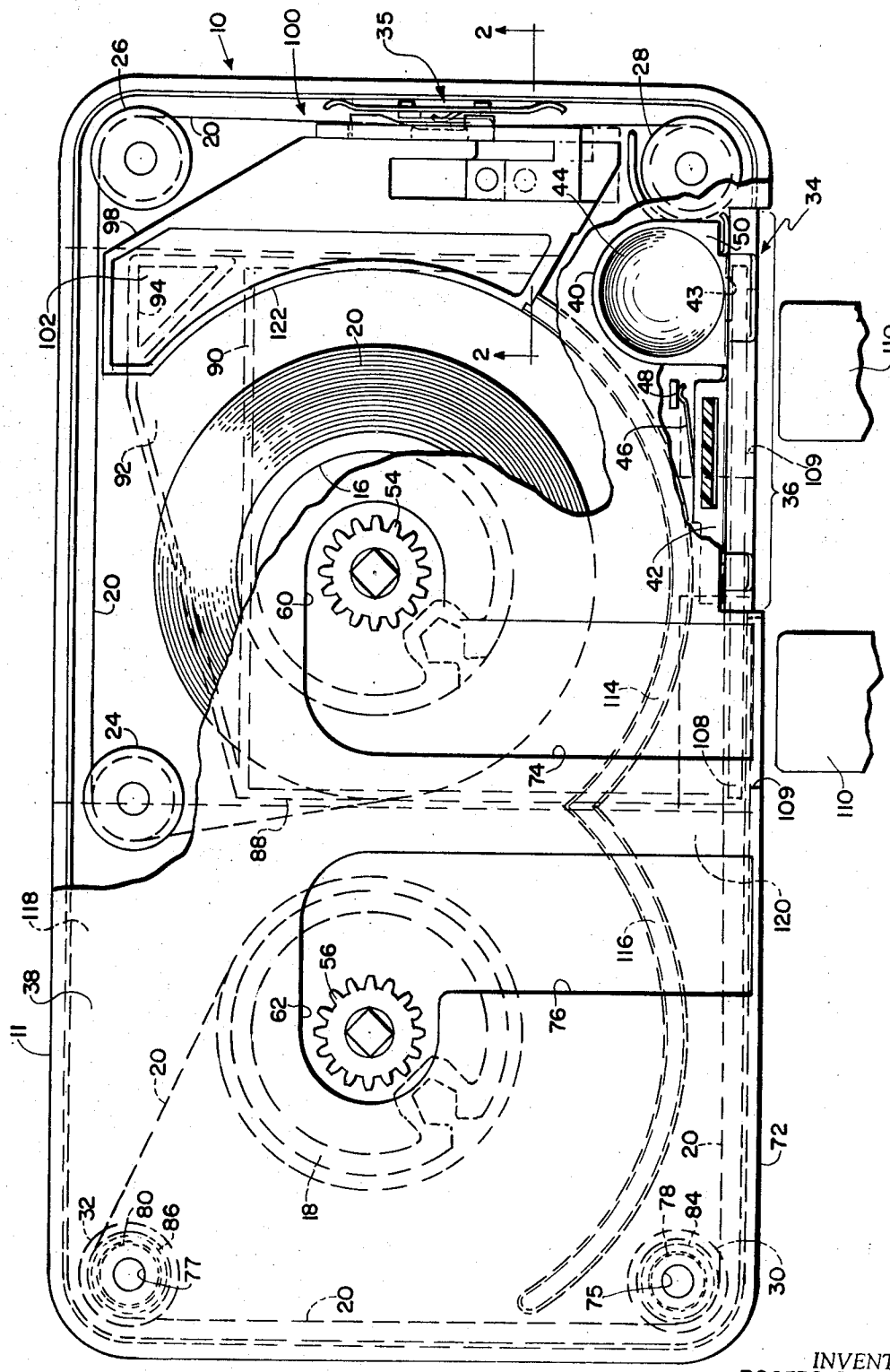


FIG. 1

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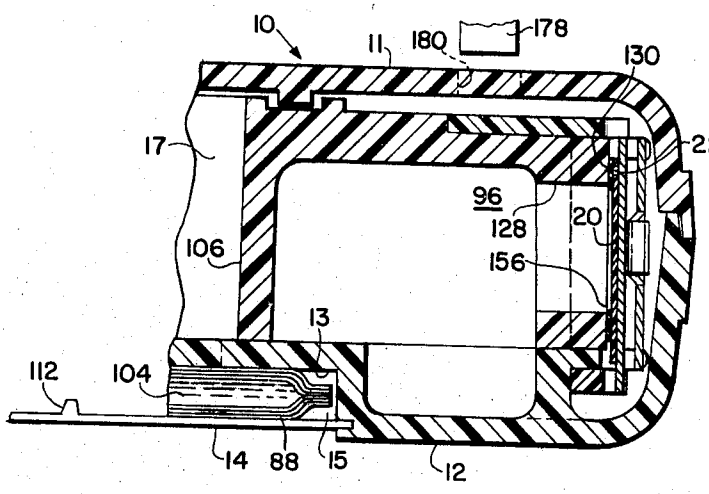


FIG. 2

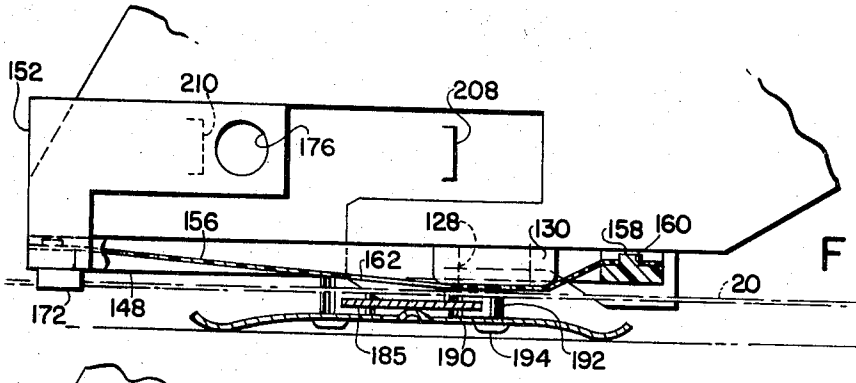


FIG. 5

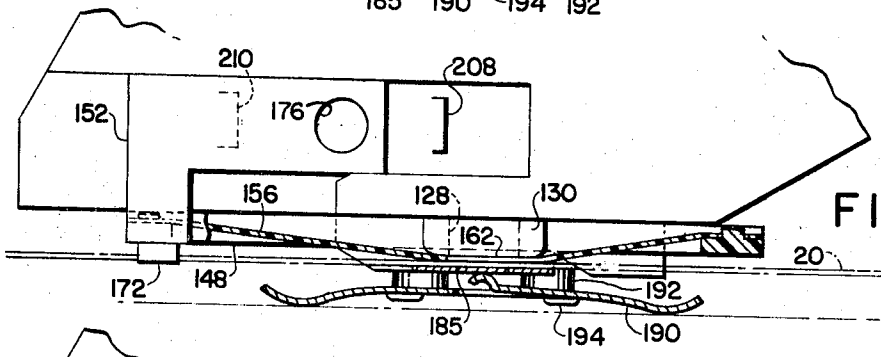


FIG. 6

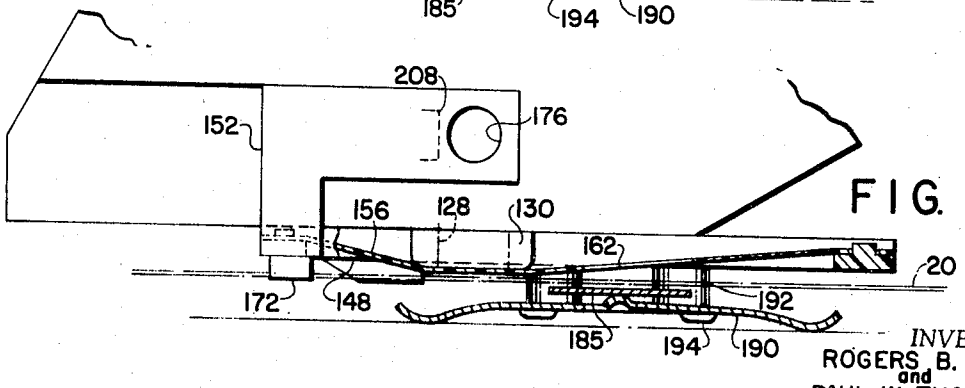


FIG. 7

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FIG. 3

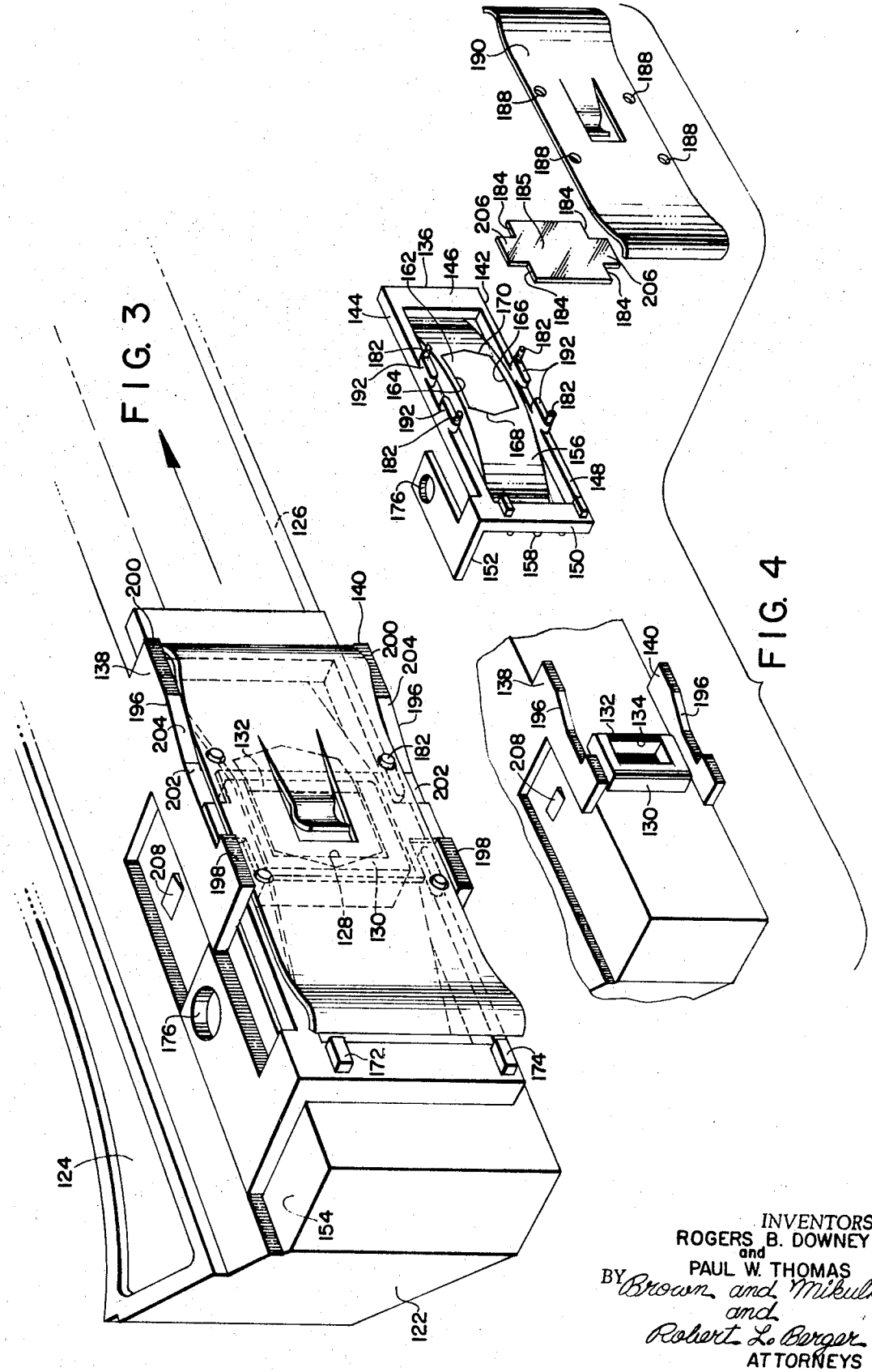


FIG. 4

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MOTION PICTURE PROCESSING SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to photography and, more particularly, to an improved system for applying a uniform coating of processing fluid to a strip of exposed 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 filmstrip 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 mailed 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 copending applications:

Serial No.	Inventor(s)	Filing Date
755,901	Edwin H. Land	Aug. 28, 1968
761,771	Rogers B. Downey	Sept. 23, 1968
767,609	Herbert A. Bing	Oct. 15, 1968 now abandoned
766,481		
Pat. No. 3,572,667	Rogers B. Downey	Nov. 18, 1968
722,789	Vaito K. Eloranta	Nov. 1, 1968 now abandoned
	Benjamin C. Ruggles	
788,897	Rogers B. Downey	Jan. 3, 1969
813,427	Rogers B. Downey	Apr. 4, 1969
813,469	Rogers B. Downey	Apr. 4, 1969
813,586	Rogers B. Downey Paul W. Thomas	Apr. 4, 1969
838,822	Rogers B. Downey Gerald H. Cook	July 3, 1969
838,783	Rogers B. Downey Philip G. Baker Gerald H. Cook	July 3, 1969
838,794	Rogers B. Downey	July 3, 1969
838,793	Philip G. Baker	July 3, 1969
838,832	Rogers B. Downey Philip G. Baker Gerald H. Cook	July 3, 1969
873,279	Rogers B. Downey	Nov. 3, 1969
885,454 Rogers B. Downey	Gerald H. Cook	Dec. 16, 1969

All these copending applications are assigned to the assignee of the present invention. The systems described therein employ a film-handling cassette and, in most instances, one from which the film is not removed during the exposure, processing and projection operations.

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 to 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 simply 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 of the type in which a dispensing container is provided with a reservoir chamber adapted to receive the processing fluid and from which it may be expressed through an orifice onto the exposed film strip and which, further, is particularly well suited for use in a compact multipurpose film handling cassette wherein the processing fluid is initially retained in a rupturable pod. Importantly, this improved system is capable of being operated by the photographer himself.

In operations of this general type, it is highly desirable to effectively control the flow of processing fluid from the applicator system so as to prevent premature leakage of the fluid and/or leakage after the exposed areas of the film strip have been treated. Obviously, premature leakage of the processing fluid can result in a situation in which sufficient processing fluid is not later available for the film processing operation itself. Additionally, any type of leakage adversely affects the cost of the operation and results in undesirable fouling of various parts of the system.

Further, in order for motion picture systems employing multipurpose film handling cassettes to enjoy widespread popularity, it is necessary that the cost of the cassettes be low, i.e., the consumer must not be required to pay an unreasonable premium for the convenience provided by such systems. This requirement for a low-cost cassette is an extremely critical consideration, the importance of which cannot be overemphasized.

One of the objects of this invention, therefore, is to provide an improved system for applying a processing fluid to a strip of exposed photographic material.

Another primary object of this invention is to provide a system of the type indicated having features which assure fail-safe operation.

A further object of this invention is to provide an improved system for selectively displacing a strip of exposed photographic material into operative relationship with an unsealed orifice adapted to have processing fluid expressed therethrough.

An additional object of this invention is to provide an improved system for selectively effecting an operable relationship between a source of processing fluid and a strip of exposed photographic material.

A still further object of this invention is to provide a compact multipurpose motion picture film-handling cassette employing an improved system for applying a processing fluid to a strip of exposed photographic material housed therein.

Also, an object of this invention is to provide a compact multipurpose film handling cassette employing an improved system for automatically displacing a strip of exposed photographic material housed therein into operative relationship with an orifice of an applicator system.

Another object of this invention is to provide a compact multipurpose motion picture film handling cassette which may be manufactured in relatively inexpensive assembly operations.

Still an additional object of this invention is to provide a compact motion picture film-handling cassette of the type indicated which includes a fail-safe film processing capability.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features that are considered characteristic of the invention are set forth with particularlity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional ob-

jects and advantages thereof will best be understood from the following description of the preferred embodiment when read in connection with the accompanying drawings wherein like numbers have been employed in the different figures to denote the same parts and wherein:

FIG. 1 is a diagrammatic cut away plan view of a compact multipurpose motion picture film-handling cassette embodying the features of this invention;

FIG. 2 is a fragmentary view illustrating details of the applicator system employed in the cassette shown in FIG. 1 taken along line 2—2 of FIG. 1;

FIG. 3 is a fragmentary diagrammatic perspective view of the applicator system employed in the cassette shown in FIG. 1 at the time when processing fluid is being applied to a strip of photographic material;

FIG. 4 is a fragmentary diagrammatic exploded perspective view of the applicator system employed in the cassette of FIG. 1;

FIG. 5 is a fragmentary view of the applicator system taken along line 5—5 of FIG. 2 when the slider of that system is in its initial position;

FIG. 6 is a view similar to FIG. 5 at such time as the applicator system's slider is in its second position with respect to that system's dispensing container; and

FIG. 7 is a view similar to FIG. 5 at such time as the applicator system's slider is in its final position with respect to that system's dispensing container.

SUMMARY OF THE INVENTION

In the illustrated embodiment of this invention, a strip of unexposed photographic material is mounted within a film handling cassette being connected between a supply spool and takeup spool. Initially, the unexposed film strip is substantially entirely coiled around the supply spool and, in reaching the takeup spool, passes through a processing station and an exposure and projection station. These two spools of the cassette are adapted to be driven by externally mounted drive shafts to effect selective reversible transport of the filmstrip therebetween. A light reflecting element is mounted behind a film gate within the aforementioned exposure and projection station so that light rays from an external light source may be selectively introduced into the cassette and reflected outwardly thereof through the film strip for projection operations.

Such a film-handling cassette may include a rupturable pod in which processing fluid is initially stored and which communicates with a dispensing container of an applicator system. The cassette may also include pod rupturing means responsive to the selective introduction into the cassette of externally mounted arms to expel the processing fluid from the pod into the aforementioned dispensing container. This container includes an exit orifice across which the film strip passes in its advancement between the supply and takeup spools.

A strip of flexible material, having an opening provided therethrough, is mounted across the frame portion of a slider. This slider is restrained against the applicator system's dispensing container by a leaf spring carried by the slider and seated against the inside face of the cassette's housing. An arm of the slider includes an aperture aligned with an elongated slot provided through the cassette's housing. In this manner, an externally mounted force applying member may be introduced into the cassette to displace the slider from an initial orifice sealing position with respect to the dispensing container into a second position, wherein the opening in the strip of flexible material is aligned with the container's orifice, and thence into a third position wherein the opening is out of alignment with the orifice and the strip of flexible material reseals the orifice. Disposed across the strip of flexible material in alignment with its opening is a pressure plate which is also carried by the slider and which, further, engages guide tracks provided on the dispensing container. These guide tracks are configured so that, when the slider is in both its initial and final positions, the film strip passes across the dispensing container's orifice intermediate of, and in spaced-apart relationship to, the strip of flexible material and the pressure plate. The guide tracks are further configured so that when the slider is displaced into its second, orifice unsealing, position, the pressure plate slideably engages the film strip against the strip of flexible material to facilitate the application of the processing fluid thereto. When the slider is in its final position, a projection on the dispensing container seats in a recess of the slider to preclude further movement of the slider within the cassette.

This cassette is adapted to be mounted in a camera for exposure operations. At such time, the processing station is inoperative and the photosensitive filmstrip is progressively drawn through the exposure station across the film gate onto the takeup spool. After the picture taking process has been completed, the cassette may be removed from the camera and inserted into a projector unit adapted to facilitate both the processing of the filmstrip and the projection of the visible images thereby formed thereon. As the cassette is inserted into the projector unit, arms of that unit automatically enter the cassette and effect a rupturing of its processing fluid-containing pod. When fully inserted into the projector unit, the cassette's projection station is aligned both with the light source and lens-shutter system of the projector.

A force-applying member of the projector is introduced into the cassette to effect the displacement of the slider into its second position wherein the opening in the strip of flexible material is aligned with the dispensing container's orifice and the pressure plate seats in the film strip against that strip of flexible material over the unsealed orifice. Drive means of the projector unit engage the cassette's supply spool to return the exposed film strip thereto from the takeup spool. During these operations, the exposed film strip passes across the orifice of the applicator system and draws processing fluid therefrom to form a uniform coating of fluid along its entire exposed surface. After this operation has been completed, the aforementioned force applying member of the projector effects a displacement of the applicator system's slider into its final position wherein the orifice is sealed and further movement of the slider with respect to the dispensing container is precluded by the container's aforementioned projection which seats in the recess provided on the slider.

The light source and drive means of the projector may then be energized to return the processed film to the takeup spool. During this operation, the processed filmstrip passes through the cassette's projection station and the visible images on the filmstrip are projected for viewing purposes.

DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

A preferred embodiment of this invention is illustrated as applying 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 sliver 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 superimposed. 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 simplification of the overall silver halide diffusion transfer-reversal process is achieved.

A composite film assembly of this type as well as processing compositions for processing 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 are 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 No. 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 an illustrated preferred embodiment of the invention is shown applying a compatible processing fluid to a film structure not requiring the removal of the 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 embodiment 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 multipurpose 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** enclosed by a flexible cover plate **14** which, in combination, define an enclosed section **15** separated from a section **17** of the cassette **10**.

In this embodiment, the cassette **10** is relatively flat and generally rectangular parallelepiped in configuration. A supply spool **16** and a takeup spool **18** are coplanarly mounted within the cassette **10** for rotation about spaced-apart parallel axes. An unexposed strip of photographic material **20**, provided with perforations **22** and with leaders affixed to the supply spool **16** and to the takeup spool **18**, is initially substantially entirely coiled around the supply spool. Passing from the supply spool **16** to the takeup spool **18**, the strip of photographic material sequentially travels around idlers **24**, **26**, **28**, **30** and **32**. Advantageously, the idlers **28** and **30** are positioned in opposite corners or extremities of the cassette **10** and on the same side of the supply spool **16** and the takeup spool **18**. Additionally, the idler **26** is advantageously positioned in the corner of the cassette **10** disposed on the other side of the supply spool **16** from the takeup spool **18** and on the opposite side of both of those spools from the idlers **28** and **30**.

Intermediate the idlers **26** and **28** the filmstrip **20** passes through a processing station **35** while intermediate the idlers **28** and **30** it passes through an exposure and projection station **34**. In this latter connection, cutout portions of the housing members **11** and **12** define an opening or film gate **36** through which image carrying light rays may enter and leave the cassette **10** and, further, through which an aperture plate (not shown() of a camera and projector may be introduced into the cassette. Also, the side wall **38** of the cassette **10** includes an opening **40** communicating with the film gate **36** for purposes which will subsequently become obvious.

Mounted within the exposure and projection station **34** so as to be in alignment with the opening **36** is a pressure plate assembly **42** having an aperture **43** and which mounts a light-reflecting element **44**. It will be noted that this light-reflecting element **44** is disposed in operable relationship to both the opening or film gate **36** and the opening **40** in the cassette's sidewall **38**. Thus, for projection purposes, light rays from an externally mounted light source may be introduced into the cassette **10** through the opening **40** onto the reflecting element **44** which redirects those rays outwardly of the cassette through the pressure plate's aperture **43** and the section of the filmstrip **20** disposed thereacross. Preferably, this light-reflecting element **44** may take a configuration similar to the prismatic element described in more detail in the aforementioned copending application S.N. 767,609 of Herbert A. Bing. As such, it includes a concave light-receiving transparent face adjacent the cassette's opening **40** and a flat reflecting surface which reflects light received into the element through its concave transparent face outwardly thereof through a convex transparent face adjacent the pressure plate's aperture **43**.

The pressure plate assembly **42** also includes a leaf spring **46** which seats against a boss **48** formed integrally with the housing member **12** to continually urge that assembly towards the cassette's opening **36**. This assembly **42** is mounted within the cassette **10** so that it may be displaced inwardly of the cassette away from the opening **36** against the force of the spring **46** whenever an aperture plate of a camera or projector (not shown) is positioned in operative relationship therewith. Forming part of the assembly **42** is a mounting bracket **50** which serves to fixedly position the light reflecting element **44** with respect to the pressure plate assembly and, more particularly, with respect to the aperture **43** of that assembly.

Axially connected to the supply spool **16** and to the takeup spool **18**, respectively, are a pair of spur gears **54** and **56**. These spur gears **54** and **56** are positioned flush with the generally flat exterior surface of the cassette's sidewall **38**. More specifically, these gears **54** and **56** are respectively mounted for rotation within recessed portions **60** and **62** of sidewall **38**.

Extending from an edge **72** of the cassette **10**, in which edge the opening or film gate **36** is formed, into communication the recessed portions **60** and **62**, respectively, are a pair of channels **74** and **76**. These channels **74** and **76** are spaced closer together than are the axes of the spur gears **54** and **56** so as to respectively form, in conjunction with the recessed portions **60** and **62**, substantially right angle depressions in the generally flat exterior surface of the cassette's sidewall **38**. This arrangement permits a pair of external coplanarly mounted driving spur gears to be displaced along the channels **74** and **76** from a position adjacent the cassette's edge **72** into engagement with the cassette's spur gears **54** and **56**. When such externally mounted driving spur gears are adapted to alternately drive the cassette's gear **56** in a clockwise direction and the cassette's gear **54** in a counterclockwise direction (as viewed in FIG. **1** of the drawings), means are available to effect reversible transport of the filmstrip **20** between the spools **16** and **18** and through the exposure and projection station **34** and the processing station **35**.

As seen in FIG. **1**, apertures **75** and **77** pass through the cassette's sidewall **38** in axial alignment with the idlers **30** and **32**, respectively. Thus, externally mounted force-applying members may be selectively introduced into the cassette **10** through these apertures **75** and **77** into engagement with the idlers **30** and **32** to preclude further rotation of those idlers. In this manner, these idlers **30** and **32** may be effectively snubbed during film exposure and projection operations. To preserve

the lighttight nature of the interior of the cassette, means are provided to effect a light seal adjacent the apertures **75** and **77**. In this connection, annular projections **78** and **80** extend interiorly of the cassette from the wall **38** in axial alignment with the apertures **75** and **77**, respectively. Also, annular projections **84** and **86** extend from the idlers **30** and **32**, respectively, into side-by-side light-sealing relationship with the projections **78** and **80**.

A rupturable pod or container **88** is positioned in the section **15** of the cassette **10** adjacent the frame member **12**. This pod **88** includes a weakened seal **90** connected to a fluid feeding device **92** provided with an aperture **94**. The fluid feeding device's aperture **94** communicates with a fluid reservoir chamber **96** of a dispensing container **98**, that forms part of an applicator system **100**, through an opening **102** in the housing member **12**. It has been found that approximately 2 cc. of processing fluid is sufficient to treat fifty feet of Super **8** format film. Consequently, when the film strip **20** is of this type and length, approximately 2 cc. of processing fluid **104** is initially retained in the rupturable pod or container **88**. Obviously, the capacity of the reservoir chamber **96** should be at least equal to that of the pod **88**. It will be noted that in the illustrated embodiment, the applicator's dispensing container **98** is uniquely configured to make maximum utilization of the available space within section **17** of the cassette **10**. In this respect, the dispensing container **98** is formed by bonding a closure member **106** to a specially configured section of the housing member **12**. The surface of the fluid feeding device **92** around the periphery of its aperture **94** is bonded to the housing member **12** adjacent its opening **102**.

As indicated, the rupturable pod **88** and fluid-feeding device **92** are positioned within the recess **13** being attached to the housing member **12** by any suitable means. A pod rupturing rod **108** is also retained within the enclosed section **15** being initially positioned adjacent the extremity of the pod **88** furthermost removed from the fluid-feeding device **92**. Slots **109** (see FIG. **1**) are appropriately provided through the flexible cover plate **14** so that externally mounted force-applying members **110** may be selectively introduced into the cassette to engage the aforementioned pod rupturing rod **108** and to effect a displacement of that rod across the pod **88** and then across the fluid-feeding device **92**. Extending from the inside face of the flexible cover plate **14** is a rib **112** (see FIG. **2**) which runs along the inside face of the cover plate intermediate the initial and final positions of the pod-rupturing rod **108** within the cassette **10**. As the rod **108** is displaced across the pod **88** and fluid-feeding device **92**, it rides on the rib **112** causing the plate **14** to flex outwardly of the cassette **10**. Substantially no fluid **104** is initially disposed within the pod **88** between the rib **112** and the housing member **12** thereby precluding premature accidental rupture of the pod. It will be appreciated that, if external means are provided to limit the flexing of the cover plate **14** as the rod **108** is displaced across the pod **88** and fluid feeding device **92**, the force of the rod against the pod will first rupture the weakened seal **90** and then cause the processing fluid **104** initially retained in the pod to be expelled therefrom through the fluid-feeding device **92** into the applicator system's reservoir chamber **96**. This particular type of pod-rupturing means does not constitute a part of the present invention and is the subject of the aforementioned copending patent application Ser. No. 838,783 by Philip G. Baker, Gerald H. Cook and Rogers B. Downey filed on July 3, 1969 and is described in considerable more detail therein.

Mounted between the housing member **12** and the wall **38** of the housing member **11** is a light-sealing arcuate member **114**, one end of which is positioned against the dispensing container **98**. The other end of the member **114** is connected to one end of a second light-sealing arcuate member **116** which extends to within the vicinity of the idler **30**. These arcuate members **114** and **116**, in combination with the dispensing container **98**, serve to effectively divide the section **17** of the cassette **10** into a first compartment **118** sealed in a lighttight manner from a second compartment **120**. Additionally, it will be noted that in the illustrated preferred embodiment the supply spool **16**, the light-sealing arcuate member **114** and a section of the peripheral wall **122** of the dispensing container **98** share a common center of curvature. Thus the arcuate member **114** and the wall **122** further serve to control the disposition of that portion of the filmstrip **20** coiled around the supply spool **16** within the cassette **10**. Similarly, the takeup spool **18** and the light-sealing arcuate member **116** share a common center of curvature and, consequently, the arcuate member **116** serves to control the disposition of that portion of the filmstrip **20** coiled around the takeup spool within the cassette **10**.

Idler **28**, around which the film strip **20** passes on its way from the supply spool **16** to the pressure plate assembly **42** may, if desired, be mounted on a movable post spring biased towards 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 **30** 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 filmstrip **20** by the conventional intermittent film advancement structure during exposure and projection operations.

It will be appreciated that the housing members **11** and **12**, as well as elements associated therewith, e.g., the arcuate members **114** and **116**, the boss **48**, the annular projections **78** and **80** and the mounting structure for the idlers **24**, **26**, **28**, **30** and **32**, may, for example, be formed from a suitable thermoplastic resin, such as an acrylic or a polystyrene, in an inexpensive injection molding process. Similarly, the flexible cover plate **14**, the spur gears **54** and **56**, the idlers **24**, **26**, **28**, **30** and **32** and the spools **16** and **18** may, if desired, be formed by injection molding processes employing similar types of material. In the case of the gears **54** and **56** and idlers **24**, **26**, **28**, **30** and **32**, a relatively low friction material such as acetal or nylon would preferably be employed.

Various details of the cassette **10** do not constitute part of the present invention and, obviously, may readily take forms other than those described. Some of these features, e.g., the snubbing arrangement, the pressure plate assembly, the light-reflecting element, the film gate arrangement, the rupturable pod fluid feeding device assembly, the pod-rupturing means and the gear engagement arrangement, are the subject of certain of the aforementioned copending applications.

Details of certain elements comprising the applicator system **100** are most clearly shown in FIGS. **3** and **4** of the drawings. In the illustrated embodiment, the dispensing container **98** is basically formed by a pair of opposed parallel walls **124** and **126**, the latter of which comprises a section of the housing member **12**, connected together adjacent their peripheral edge surfaces by the wall **122**. An orifice **128** is provided through the wall **122** and a rectangular projection **130** extends a short distance from the outside face of the wall **122** around the periphery of that orifice. A section **132** of the projection **130** is tapered so as to form a doctor blade **134**. Slidably disposed between shoulders **138** and **140** extending from the dispensing container **98** is a slider **136**, preferably formed of a relatively high-strength rigid material such as glass-filled polycarbonate or glass-filled nylon. This slider **136** includes a frame portion **142**, defined by members **144**, **146**, **148** and **150**, and an arm **152** which extends at a right angle from its frame portion to seat on a recessed section **154** of the container's wall **124**.

Mounted across the frame portion **142** of the slider **136** is a strip of flexible material **156**, which may, for example, be formed of a polymeric material such as "Mylar" manufactured by E. I. DuPont de Nemours of Wilmington, Delaware, or of a thin sheet of stainless steel. To facilitate the attachment of the strip of flexible material **156** to the slider **136**, a plurality of pins **158** extend from each of the slider's members **146** and **150** in the direction of the dispensing container **98** while respective ends of the strip of flexible material are provided

with a plurality of perforations **160** adapted to receive such pins. After the flexible material **156** has been mounted on the pins **158**, the ends of the pins are deformed, for instance cold headed, to retain the flexible material thereon. This represents an extremely simple and inexpensive method of attaching the strip of flexible material **156** across the frame portion **142** of the slider **136**. It will be noted that, when the slider **136** is seated against the dispensing container **98** between the shoulders **138** and **140**, those sections of the strip of flexible material **156** intermediate the projection **130** and the slider's members **146** and **150** turn inwardly from the projection toward the dispensing container.

The strip of flexible material **156** is provided with an opening **162** that preferably includes a pair of parallel sides **164** and **166** connected by tapered sides **168** and **170**, the purpose therefor to be explained hereinafter.

As will be more fully described, the processing fluid **104** is adapted to be expressed from the reservoir chamber **96**, through the orifice **128** and the opening **162** in the flexible material **156**, onto the filmstrip **20** as it is progressively advanced through the cassette's processing station **35** (see FIG. **6**). During this operation, the strip of photographic material **20** is seated against the flexible material **156**. As the film strip **20** is advanced across the orifice **128**, projections **172** and **174** extending from the slider's member **150** serve to laterally position the filmstrip on the slider **136**. Consequently, these projections **172** and **174** are spaced substantially the same distance apart as the width of the filmstrip **20**. The height of the orifice **128** (as viewed in FIGS. **3** and **4** of the drawings) is preferably the same dimension as the distance between the parallel sides **164** and **166** of the flexible material's opening **162** and this dimension is determined by the width of the surface of the strip of photographic material **20** to be treated with processing fluid **104**.

It will now be noted that the slider's arm **152** includes a circular aperture **176** adapted to receive an externally mounted pin **178** which may be selectively inserted into the cassette **10** through an elongated slot **180** (See FIG. **2**) provided in its wall **38**.

Extending from the slider members **144** and **148** are a plurality of pins **182** which respectively pass through cutout corners **184** of a pressure plate **185** and thence through apertures **188** appropriately provided in a leaf spring **190**. These pins **182** are positioned on the slider **136** so as to align the pressure plate **185** over the opening **162** in the strip of flexible material **156** and also serve to carry the pressure plate and the leaf spring **190** with the slider as it is displaced from one position to another with respect to the dispensing container **98**. While the arrangement for the leaf spring **190** is such that that member is engaged between the inside face of the cassette **10** and enlarged base portions **192** of the pins **182** to effectively seat the slider **136** against the dispensing container **98**, the ends **194** of the pins **182** are preferably flattened (See FIG. **5**, **6** or **7**) to retain the leaf spring thereon. This arrangement permits the slider **136** with its strip of flexible material **156**, the pressure plate **185** and the leaf spring **190** connected thereto, to be handled by itself as a complete assembly during production operations.

It will be noted that the dispensing container's shoulders **138** and **140** which, as indicated, serve to restrain lateral movement of the slider **136**, are provided with specially configured guide tracks **196**. More specifically, each guide track **196** includes raised end portions **198** and **200**, an intermediate recessed portion **202** and a tapered portion **204**. Importantly, the leaf spring **190** serves to continually urge the projections **206** of the pressure plate **185** against respective guide tracks **196** as the slider **136** is displaced along the dispensing container **98**.

In FIG. **5**, the slider **136** and the elements carried thereby are shown in their initial position within the cassette **10**, i.e., as the cassette is initially furnished with an unexposed filmstrip **20** coiled on its supply spool **16**. At such time, the opening **162** in the strip of flexible material **156** is out of alignment with the dispensing container's orifice **128** and, thus, that orifice is effectively sealed. Also, at such time, the pressure plate **185** is seated on the raised end portions **198** of the dispensing container's guide tracks **196** thereby being disposed in spaced-apart relationship with the strip of flexible material **156**. In this arrangement, the strip of photographic material **20** is disposed between, and in spaced apart relationship with, the strip of flexible material **156** and the pressure plate **185**. The slider **136** remains in this position during exposure operations and until after the cassette's pod **88** has been ruptured and the processing fluid **104** expelled therefrom into the dispensing container **98**.

To facilitate film processing operations, after the cassette **10** has been inserted into the projector unit and the processing fluid **104** expelled from the pod **88** into the applicator system's reservoir chamber **96**, the slider **136** may be displaced into its second position illustrated in FIG. **6** of the drawings. As shown therein, the opening **162** in the strip of flexible material **156** has been brought into alignment with the dispensing container's orifice **128** and the pressure plate's projections **206** are aligned with the recessed portions **202** of the guide tracks **196**. Thus, the leaf spring **190** has caused the pressure plate **185** to be displaced inwardly of the cassette **10** to slidably engage the filmstrip **20** against the strip of flexible material **156** adjacent the unsealed orifice **128**. It will be noted that the opening **162** in the strip of flexible material **156** is sized so as to extend over the side of the projection **130** disposed farthest away from the direction from which the film strip **20** is advanced across the orifice **128** during the processing operations. This arrangement permits the filmstrip **20** to draw processing fluid **104** from the orifice **128**. The thickness of the coating of processing fluid **104** applied to the filmstrip **20** is thus a function of the thickness of the strip of flexible material **156**.

After the filmstrip **20** has been provided with a uniform coating of processing fluid along its entire photoexposed length, the slider **136** is displaced into its third position with respect to the dispensing container **98** as depicted in FIG. **7** of the drawings. During such displacement of the slider **136**, the pressure plate's projections **206** move along the tapered portions **204** of the guide tracks **196** onto the tracks' raised end portions **200**. Thus, the pressure plate is once more displaced away from the dispensing container **98** permitting the filmstrip **20** to return to its initial position wherein it is disposed intermediate of, and in spaced-apart relationship to, the pressure plate and the strip of flexible material **156**. At the same time, the opening **162** in the strip of flexible material **156** is advanced out of alignment with the orifice **128** so that the flexible material reseals that orifice. Importantly, a slightly raised projection **208** extends from the recessed section **154** of the container's wall **124** to automatically engage a recess **210** formed in the lower face (as viewed in FIGS. **3** and **4**) of the slider's arm **152** when the slider is disposed in its position as shown in FIG. **7**. Thus, the slider **136** is locked in its last stated position providing the applicator system **100** with a fail-safe capability, i.e., subsequent inadvertent unsealing of the orifice **128** is precluded.

Interference between the opening **162** of the flexible material **156** and the projection **130** during displacement of the slider **136** is minimized by the tapered configuration of the opening's lateral sides **168** and **170**.

OPERATION OF THE ILLUSTRATED EMBODIMENT

To summarize the operation of the illustrated embodiment of this invention, the cassette **10** with its filmstrip **20** in an unexposed photosensitive condition, substantially entirely coiled on the supply spool **16**, and with its processing fluid **104** retained within the rupturable pod or container **88** is adapted to be quick mounted in a camera (not shown). As previously explained, at this time the slider **136** is positioned as shown in FIG. **5** of the drawings such that the dispensing container's orifice **128** is sealed by the flexible material **156** and the filmstrip

20 is positioned between and in spaced apart relationship to the strip of flexible material and the pressure plate 185.

The aforementioned camera may consist of a plurality of conventional elements normally associated with such photographic apparatus, e.g., a battery, a motor, a takeup spool-driving arrangement, an intermittent clawlike film advancement mechanism, an aperture plate, a shutter and a lens system. These components of the camera are arranged such that, as the cassette 10 is inserted into that apparatus, a driving gear thereof slides along the cassette's channel 76 into engagement with the gear 56. Additionally, when the cassette 10 is fully inserted into the camera, its pressure plate assembly 42 has been displaced inwardly of the cassette by the camera's aperture plate to position the section of the filmstrip 20 disposed thereacross in the proper focal plane for exposure purposes. Further, at such time, the camera's intermittent film advancement mechanism is disposed in operable relationship with that section of the filmstrip 20 disposed across the pressure plate assembly 42 and the camera's lens and shutter are aligned with the cassette's film gate 36. This camera would also include a pair of displaceably mounted force-applying members adapted to be introduced into the cassette 10 through its apertures 75 and 77, respectively, to effect a snubbing of the cassette's idlers 30 and 32. In this connection, the camera may include a conventional mechanism for driving these force-applying members inwardly of the cassette 10 after the cassette is mounted in the camera or, more preferably, these force-applying members may be spring mounted within the camera so as to be displaced in a direction away from the cassette during the cassette insertion process and to automatically enter the cassette through its apertures 75 and 77 when the cassette is fully seated in the camera. Thus, the idlers 30 and 32 are effectively snubbed during exposure operations. As the photosensitive filmstrip 20 is drawn across the film gate 36 in incremental steps and subsequently coiled around the takeup spool 18, latent images of the scene being photographed are recorded thereon.

After the exposure operations have been completed, the cassette 10 is removed from the camera and inserted into a projector unit to facilitate both film processing and projection operations. Such a projector unit may include conventional elements normally associated with such equipment. For instance, it includes a shutter and a projection lens located to be automatically positioned in operable relationship with the cassette's film gate 36 when the cassette 10 is mounted therein. It may include a rear projection screen or, alternately, a remote screen may be set up in alignment with its projection lens. Also, the projector includes an intermittent film advancement mechanism and an aperture plate located to be operably associated with the cassette's pressure plate assembly 42 when the cassette is fully inserted into the projector. More specifically, the projector's aperture plate is introduced into the cassette 10 through its film gate 36 to displace the pressure plate assembly 42 inwardly of the cassette and position that section of the filmstrip disposed thereacross in the proper plane for projection purposes. Also at such time, the light source of the projector unit is aligned with the cassette's opening 40.

As the cassette 10 is inserted into the projector unit, force-applying members 110 (See FIG. 1) of that unit enter the cassette through the slots 109 in the cover plate 14 and displace the cassette's rod 108 across the pod 88 and the fluid feeding device 92. At the same time, flexure of the cover plate 14 is limited by a support member of the projector. Thus, as a result of the cassette insertion process, the processing fluid 104 is expelled from the pod 88 into the reservoir chamber 96 of the dispensing container 98. Also, the projector unit includes a pair of drive gears positioned to slide along the channels 74 and 76, respectively, into operative position with respect to the cassette gears 54 and 56. Such drive gears of the projector unit may then be selectively and alternately energized to effect reversible transport of the filmstrip 20 within the cassette 10 from the takeup spool 18 to the supply spool 16 through both the cassette's processing station 35 and projection station 34.

Once the cassette 10 has been inserted into the projector unit, the projector's pin 178 (See FIG. 2) is introduced into the cassette through the elongated slot 180 to seat in the circular aperture 176 of the slider's arm 152. This pin 178 is then displaced to move the slider 136 into its second position shown in FIG. 6 of the drawings. At such time, the filmstrip 20 is positioned in operable relationship with the orifice 128, i.e., the orifice 128 is unsealed and the filmstrip is slidably engaged by the pressure plate 185 against the strip of flexible material 156. By then energizing the projector's driving gear engaging the cassette's gear 54, the filmstrip 20 is returned through the processing station 35 to the supply spool 16. During this operation, processing fluid 104 is expressed from the dispensing container's orifice 128 to form a uniform fluid coating along the entire length of exposed filmstrip 20.

Once the processed filmstrip 20 has been rewound onto the supply spool 16, the projector's pin 178 is displaced to move the slider into its final "locked" position wherein the orifice 128 is sealed and the film strip is disposed intermediate of, and spaced apart from, the flexible material 156 and the pressure plate 185. The projector unit also includes displaceably mounted pins (not shown) aligned with the cassette's apertures 75 and 77, respectively, which are inserted into the cassette 10 at this time to snub the idlers 30 and 32. By then energizing the projectors's light source, its drive shaft engaging the cassette's gear 56 and its intermittent film advancement mechanism, the film strip 20 is intermittently advanced across the cassette's film gate 36 and subsequently wound around its takeup spool 18. During this advancement of the processed filmstrip 20 across the film gate 36, light rays from the projector's light source are redirected outwardly of the cassette 10 by the light-reflecting element 44 through the pressure plate's aperture 43, that section of the filmstrip disposed thereacross and the film gate 36. These image-carrying light rays are focused by the projecters's lens system on the aforementioned screen for viewing purposes.

The cassette 10 serves as a permanent storage container for the filmstrip 20 and editing of the processed film strip can readily be effected by drawing a loop thereof from the film gate 36 and removing sections therefrom and/or splicing sections thereinto as desired.

In describing the operation of the illustrated embodiment of this invention, it was stated that the cassette 10 is inserted into a projector that includes fixedly positioned force applying arms 110. It will be recognized that such force-applying arms 110 may, if desired, be displaceably mounted within the projector unit and capable of being introduced into the cassette 10 after such cassette had been fully inserted into the projector unit. In such an arrangement, the pod 88 is not automatically ruptured during the insertion process and it would not be necessary to seal the cassette's orifice 128 until just prior to driving the arms 110 into the cassette 10. Consequently, under such circumstances, the slider 136 and the strip of flexible material 156 could be designed such that the opening 162 in the flexible material is partially aligned with the orifice 128 when the slider 136 is in its initial position with respect to the dispensing container 98. In other words, when the pod rupturing operation is performed after the cassette 10 has been fully inserted into the projector unit, there is not requirement to initially seal the orifice 128 since the film strip 20 can be seated against the flexible material 156 over the unsealed orifice 128 prior to expelling the fluid 104 from the pod 88 into the dispensing container's reservoir chamber 96. Such an arrangement of this invention may prove desirable where space limitations restrict the amount of travel of the slider 136 along the dispensing container 98.

Those familiar with the motion picture arts will readily appreciate the novel and highly unique advantages of this invention. An inexpensive and efficient system is provided for uniformly coating an exposed strip of photographic material with processing fluid while precluding undesirable fluid leakage. A major portion of the processing system may be preassembled prior to incorporation into a cassette structure

thereby significantly reducing production costs associated with such cassettes. Importantly, this system is provided with a fail-safe feature.

This invention may be practiced or embodied in still other ways without departing from the spirit or essential character thereof. The preferred embodiment described herein is 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. In a system for applying a coating of processing fluid to a strip of exposed photographic material, the improvement comprising:

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

first means mounted for displacement between said dispensing container and such strip of photographic material for permitting such fluid to be expressed from said orifice when in one position with respect thereto and for sealing said orifice when subsequently displaced into another position with respect thereto;

second means for progressively advancing such strip of exposed photographic material along a path transverse said orifice in operative relationship thereto when said first means is in said one position; and

third means for automatically locking said first means in position with respect to said dispensing container when displaced into said other position.

2. The improvement of claim 1 additionally comprising a slider to which said first means is connected and said third means comprises a pair of cooperating elements respectively associated with said slider and said dispensing container to automatically engage one another when said first means is disposed in said other position.

3. The improvement of claim 2 wherein said first means comprises a strip of flexible material having an opening provided therethrough, said opening being aligned with said orifice when said first means is disposed in its said one position with respect to said orifice.

4. In a system for applying a coating of processing fluid to a strip of exposed photographic material, the improvement comprising:

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

first means mounted for displacement between said dispensing container and such strip of photographic material for initially sealing said orifice and subsequently sequentially unsealing and resealing said orifice;

second means for progressively advancing such strip of exposed photographic material along a path transverse said orifice in operative relationship thereto; and

third means for automatically locking said first means in position with respect to said dispensing container when displaced into its said resealing relationship therewith.

5. The improvement of claim 4 additionally comprising a slider to which said first means is connected and said third means comprises a pair of cooperating elements respectively associated with said slider and said dispensing container to automatically engage one another when said first means is disposed in its said resealing relationship with respect to said orifice.

6. In a system for applying a coating of processing fluid to a strip of exposed photographic material, the improvement comprising:

a dispensing container having an orifice through which such processing fluid may be expressed from said dispenser;

a slider mounted for displacement from an initial position into a second position and thence into a third position with respect to said dispensing container;

first means connected to said slider and interposed between said orifice and such strip of photographic material for permitting such fluid to be expressed from said orifice when said slider is in its said second position and for sealing said orifice when said slider is in its said third position; and

second means for progressively advancing such strip of photographic material along a path transverse said orifice in operative relationship therewith when said slider is in its said second position, whereby such processing fluid may be expressed from said dispensing container onto such strip of photographic material.

7. The improvement of claim 6 additionally comprising means for automatically locking said slider in position with respect to said dispensing container when displaced into its said third position.

8. The improvement of claim 6 wherein said first means comprises a strip of flexible material having an opening provided therethrough.

9. The system of claim 8 wherein said slider includes a frame portion across which said strip of flexible material is mounted.

10. The system of claim 9 wherein said slider comprises at least one pin extending from each of a pair of opposite sides of said frame portion thereof and said strip of flexible material is provided with apertures through which said pins are positioned to connect said strip of flexible material to said slider, said apertures being located through said strip of flexible material so that said opening is positioned within said frame portion of said slider.

11. The improvement of claim 6 additionally including means on said slider for aligning such strip of photographic material with respect thereto and to said orifice as such strip of photographic material is advanced across said orifice in operative relationship therewith.

12. In a system for applying a coating of processing fluid to a strip of exposed photographic material, the improvement comprising:

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

a slider mounted for displacement from an initial position into a second position and thence into a third position with respect to said dispensing container;

first means connected to said slider and interposed between said orifice and such strip of photographic material for sealing said orifice when said slider is in its said initial position, for unsealing said orifice when said slider is in its said second position and for resealing said orifice when said slider is in its said third position; and

second means for progressively advancing such strip of photographic material along a path transverse said orifice in operative relationship therewith when said slider is in its said second position, whereby such processing fluid may be expressed from said dispensing container onto such strip of photographic material.

13. The improvement of claim 12 additionally comprising means for automatically locking said slider in position with respect to said dispensing container when displaced into its said third position.

14. In a system for applying a coating of processing fluid to a strip of exposed photographic material, the improvement comprising:

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

first means for initially sealing said orifice and subsequently sequentially unsealing and resealing said orifice, said first means including a slider mounted for displacement with respect to said dispensing container having a frame portion and a strip of flexible material connected across said frame portion and overlaying said orifice having an opening provided therethrough; and

second means for progressively advancing such strip of photographic material along a path transverse to said orifice in operative relationship therewith when said orifice is unsealed, whereby such processing fluid may be expressed from said dispensing container onto such strip of photographic material.

15. The improvement of claim 14 additionally comprising means for automatically locking said slider in position with respect to said dispensing container when said orifice is resealed.

16. In a a system for applying a coating of processing fluid to a strip of exposed photographic material, the improvement comprising:

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

first means for initially positioning a section of such strip of photographic material in alignment with said orifice in spaced apart inoperative relationship therewith;

second means for progressively advancing such strip of photographic material along a path transverse said orifice;

third means for selectively sealing and unsealing said orifice including a slider mounted for displacement from at least one position to another with respect to said dispensing container; and

fourth means for displacing such strip of photographic material from its spaced apart inoperative relationship with said orifice into operative relationship with said orifice when said orifice is unsealed and as such strip of exposed photographic material is progressively advanced thereacross, said fourth means including at least one guide track, a pressure plate carried by said slider and disposed on the opposite side of such strip of photographic material from said dispensing container and fifth means for resiliently urging said pressure plate against said guide track, said guide track being configured to position said pressure plate in spaced-apart relationship to such strip of photographic material when said orifice is sealed by said third means and to permit said fifth means to automatically displace such strip of photographic material into its said operative relationship with said orifice whenever said orifice is unsealed whereby said pressure plate supports such strip of photographic material in its said operative relationship with said orifice as such processing fluid is expressed from said dispensing container through said orifice.

17. The improvement of claim 16 wherein said guide track extends from said dispensing container.

18. The improvement of claim 16 comprising a pair of spaced-apart members between which said slider is mounted, each comprising one said guide track and serving to restrain lateral movement of said slider during such displacement thereof.

19. The improvement of claim 16 wherein said fifth means comprises a leaf spring connected to said slider.

20. The improvement of claim 16 wherein a plurality of projections extend from said slider and said pressure plate is positioned between said projections and configured to be engaged by said projections at least during the displacement of said slider whereby said pressure plate is carried by said slider.

21. The improvement of claim 20 wherein said leaf spring is connected to said slider by said projections.

22. The improvement of claim 16 additionally including a projection extending from said dispensing container adjacent the periphery of said orifice and wherein aid slider includes a frame portion and said third means additionally includes a strip of flexible material, connected to said slider across said frame portion to seat against said projection, with a portion thereof extending beyond the side of said projection disposed away from the direction from which such strip of photographic material is advanced transverse said orifice turned inwardly toward said dispensing container, having an opening located therethrough to be out of alignment with said orifice when said slider is in its said one position to effect the sealing thereof and to be aligned with said orifice when said slider is in its said another position to unseal said orifice, said opening being of sufficient size to extend beyond said side of said projection when said slider is in its said another position.

23. The improvement of claim 16 wherein said slider is mounted for movement from a first position wherein said orifice is sealed into a second position wherein said orifice is unsealed and thence into a third position wherein said orifice is resealed and additionally including means for automatically locking said slider in position with respect to said dispensing container when in its said third position.

24. The improvement of claim 16 additionally including means on said slider for aligning said strip of photographic material with respect thereto and to said orifice as such strip of photographic material is advanced across said orifice in operative relationship therewith.

25. In a motion picture film-handling cassette for first exposing and then applying a processing fluid to a strip of photographic material, the improvement comprising:

an enclosed opaque housing;

an unexposed strip of photographic material coiled within said housing;

a film gate for access of light to an incremental section of said unexposed strip of photographic material;

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

first means for selectively sealing said orifice displaceably interposed between said orifice and said strip of photographic material for movement from an initial position into a second position wherein said orifice is unsealed and thence into a final position wherein said orifice is sealed;

second means for progressively advancing said strip of photographic material within said housing across said film gate for exposure purposes when said first means is in its said initial position and subsequently across said orifice in operative relationship thereto when said first means is in its said second position; and

third means for automatically locking said first means in position with respect to said orifice when displaced into its said final position.

26. The improvement of claim 25 additionally comprising a slider to which said first means is connected and wherein said third means comprises a pair of cooperating elements respectively associated with said slider and said dispenser to automatically engage one another when said first means is disposed in its said final position.

27. In a motion picture film-handling cassette for first exposing and then applying a processing fluid to a strip of photographic material, the improvement comprising:

an enclosed opaque housing;

an unexposed strip of photographic material coiled within said housing;

a film gate for access of light to an incremental section of said unexposed strip of photographic material;

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

first means displaceably interposed between said orifice and said strip of photographic material for initially sealing said orifice and subsequently sequentially unsealing and resealing said orifice;

second means for progressively advancing said strip of photographic material within said housing across said film gate for exposure purposes when said orifice is sealed and subsequently across said orifice when said orifice is unsealed in operative relationship thereto for treatment with such processing fluid; and

third means for automatically locking said first means in position with respect to said orifice when said first means is subsequently displaced into its said resealing relationship therewith.

28. The improvement of claim 27 additionally comprising a slider to which said first means is connected and wherein said third means comprises a pair of cooperating elements respectively associated with said slider and said dispensing container to automatically engage one another when said first means is disposed in its said resealing relationship with respect to said orifice.

29. In a motion picture film-handling cassette for first exposing and then applying a processing fluid to a strip of photographic material, the improvement comprising:

an enclosed opaque housing having an elongated slot provided therethrough;

an unexposed strip of photographic material coiled within said housing;

a film gate for access of light to an incremental section of said unexposed strip of photographic material;

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

a slider mounted for displacement from an initial position into a second position and thence into a third position with respect to said dispensing container, a portion of said slider being disposed in operable relationship to said slot whereby an external force-applying member may engage said portion of said slider to selectively effect such displacement thereof;

first means connected to said slider and interposed between said orifice and said strip of photographic material for permitting such fluid to be expressed from said orifice when said slider is in its said second position and for sealing said orifice when said slider is in its said third position; and

second means for progressively advancing said strip of photographic material within said housing across said film gate for exposure purposes when said slider is in its said initial position and subsequently across said orifice in operative relationship thereto when said slider is in its said second position for treatment of said strip of photographic material with such processing fluid.

30. The improvement of claim **29** additionally comprising means for automatically locking said slider in position with respect to said dispensing container when displaced into its said third position.

31. The improvement of claim **29** wherein said first means comprises a strip of flexible material having an opening provided therethrough and said slider includes a frame portion across which said strip of flexible material is mounted.

32. In a motion picture film-handling cassette for first exposing and then applying a processing fluid to a strip of photographic material, the improvement comprising:

an enclosed opaque housing having an elongated slot provided therethrough;

an unexposed strip of photographic material coiled within said housing;

a film gate for access of light to an incremental section of said unexposed strip of photographic material;

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

a slider mounted for displacement from an initial position into a second position and thence into a third position with respect to said dispensing container, a portion of said slider being disposed in operative relationship to said elongated slot whereby an external force applying member may engage said portion of said slider to selectively effect such displacement thereof;

first means connected to said slider and interposed between said orifice and said strip of photographic material for sealing said orifice when said slider is in its said initial position, for unsealing said orifice when said slider is in its said second position and for resealing said orifice when said slider is in its said third position; and

means for progressively advancing said strip of photographic material within said housing across said film gate for exposure purposes when said slider is in its said initial position and subsequently across said orifice in operative relationship thereto when said slider is in its said second position for treatment of said strip of photographic material with such processing fluid.

33. The improvement of claim **19** additionally comprising means for automatically locking said slider in position with respect to said dispensing container when displaced into its said third position.

34. In a motion picture film-handling cassette for first exposing and then applying a processing fluid to a strip of photographic material, the improvement comprising:

an enclosed opaque housing having an elongated slot provided therethrough;

an unexposed strip of photographic material coiled within said housing;

a film gate for access of light to an incremental section of said unexposed strip of photographic material;

a dispensing container having an orifice through which said processing fluid may be expressed therefrom;

first means for initially sealing said orifice and subsequently sequentially unsealing and resealing said orifice, said first means including a slider mounted for displacement with respect to said dispensing container having a frame portion and a strip of flexible material connected across said frame portion overlying said orifice having an opening provided therethrough, a portion of said slider being disposed in operative relationship to said elongated slot whereby an external force applying member may engage said portion of said slider to selectively effect such displacement thereof; and

second means for progressively advancing such strip of photographic material within said housing across said film gate for exposure purposes when said orifice is initially sealed by said first means and subsequently across said orifice in operative relationship thereto when said orifice is unsealed for treatment of said photographic material with such processing fluid.

35. In a motion picture film-handling cassette for first exposing and then applying a processing fluid to a strip of photographic material, the improvement comprising:

an enclosed opaque housing having an elongated slot provided therethrough;

an unexposed strip of photographic material coiled within said housing;

a film gate for access of light to an incremental section of said unexposed strip of photographic material;

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

first means for selectively sealing and unsealing said orifice including a slider mounted for displacement from an initial position with respect to said orifice into a second orifice unsealing position and thence into an orifice sealing position, said slider having a portion thereof disposed in operable relationship with said elongated slot whereby an externally mounted force applying member may engage said portion of said slider to effect such displacement thereof;

second means for initially positioning a section of said strip of photographic material in alignment with said orifice in spaced apart inoperative relationship therewith when said slider is in its said initial position;

third means for progressively advancing such strip of photographic material within said housing across said film gate for exposure purposes when said slider is in its said initial position and subsequently along a path transverse said orifice when said slider is in its second position; and

fourth means for displacing said strip of photographic material from its spaced-apart inoperative relationship with said orifice into operative relationship with said orifice when said slider is disposed in its said second position and as said strip of exposed photographic material is progressively advanced thereacross, said fourth means including at least one guide track, a pressure plate carried by said slider and disposed on the opposite side of said strip of photographic material from said dispensing container and fifth means for resiliently urging said pressure plate against said guide track, said guide track being configured to position said pressure plate in spaced apart relationship to said strip of photographic material when said slider is in its said initial and orifice sealing positions and to permit said fifth means to automatically displace said strip of photographic material into its said operative relationship with said orifice when said slider is in its said second position, whereby said pressure plate supports

said strip of photographic material in its said operative relationship with said orifice as such processing fluid is expressed from said dispensing container through said orifice.

36. The improvement of claim 35 wherein a plurality of projections extend from said slider and said pressure plate is positioned between said projections and configured to be engaged by said projections AT least during the displacement of said slider whereby said pressure plate is carried by said slider.

37. The improvement of claim 36 wherein said fifth means comprises a leaf spring connected to said slider by said projections.

38. The improvement of claim 35 additionally including a projection extending from said dispensing container adjacent the periphery of said orifice and wherein said slider includes a frame portion and said first means additionally includes a strip of flexible material, connected to said slider across said frame portion to seat against said projection with a portion thereof extending beyond the side of said projection disposed away from the direction from which said strip of photographic material is advanced transverse said orifice when said slider is in its said second position turned inwardly toward said dispensing container, having an opening located therethrough to be out of alignment with said orifice when said slider is in its said orifice sealing position and to be aligned with said orifice when said slider is in its said second position, said opening being of sufficient size to extend beyond said side of said projection when said slider is in its said second position.

39. In a motion picture film-handling cassette for first exposing and then applying a processing fluid to a strip of photographic material, the improvement comprising:

an enclosed opaque housing having an elongated slot provided therethrough;

an unexposed strip of photographic material coiled within said housing;

a film gate for access of light to an incremental section of said unexposed strip of photographic material;

a dispensing container having an orifice through which such processing fluid may be expressed therefrom;

first means for selectively sealing and unsealing said orifice including a slider mounted for displacement from at least one position to another with respect to said dispensing container, said slider having a portion thereof disposed in operable relationship with said elongated slot whereby an externally mounted force applying member may engage said portion of said slider to effect such displacement thereof;

second means for initially positioning a section of said strip of photographic material in alignment with said orifice in spaced apart inoperative relationship therewith when said orifice is sealed;

third means for progressively advancing such strip of photographic material within said housing across said film gate for exposure purposes when said orifice is sealed and subsequently along a path transverse said orifice when said orifice is unsealed; and

fourth means for displacing said strip of photographic material from its spaced-apart inoperative relationship with said orifice into operative relationship with said orifice when said orifice is unsealed and as said strip of exposed photographic material is progressively advanced thereacross, said fourth means including at least one guide track, a pressure plate carried by said slider and disposed on the opposite side of said strip of photographic material from said dispensing container and fifth means for resiliently urging said pressure plate against said guide track, said guide track being configured to position said pressure plate in spaced-apart relationship to said strip of photographic material when said orifice is sealed by said first means and to permit said fifth means to automatically displace said strip of photographic material into its said operative relationship with said orifice whenever said orifice is unsealed, whereby said pressure plate supports said strip of photographic material in its said operative relationship with said orifice as such processing fluid is expressed from said dispensing container through said orifice.

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