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Stella

[11] **3,824,007**

[45] **July 16, 1974**

[54] **PHOTOGRAPHIC CASSETTE SYSTEM HAVING ROTARY CAPILLARY APPLICATOR OF PROCESSING FLUID**

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

[22] Filed: **Dec. 26, 1972**

[21] Appl. No.: **318,464**

[52] **U.S. Cl.** ..... **352/130,** 95/89 R, 118/401, 352/72

[51] **Int. Cl.** **G03c 11/00**

[58] **Field of Search** ..... 352/130, 72, 78 R; 95/89 R, 90.5; 118/401

[56] **References Cited**

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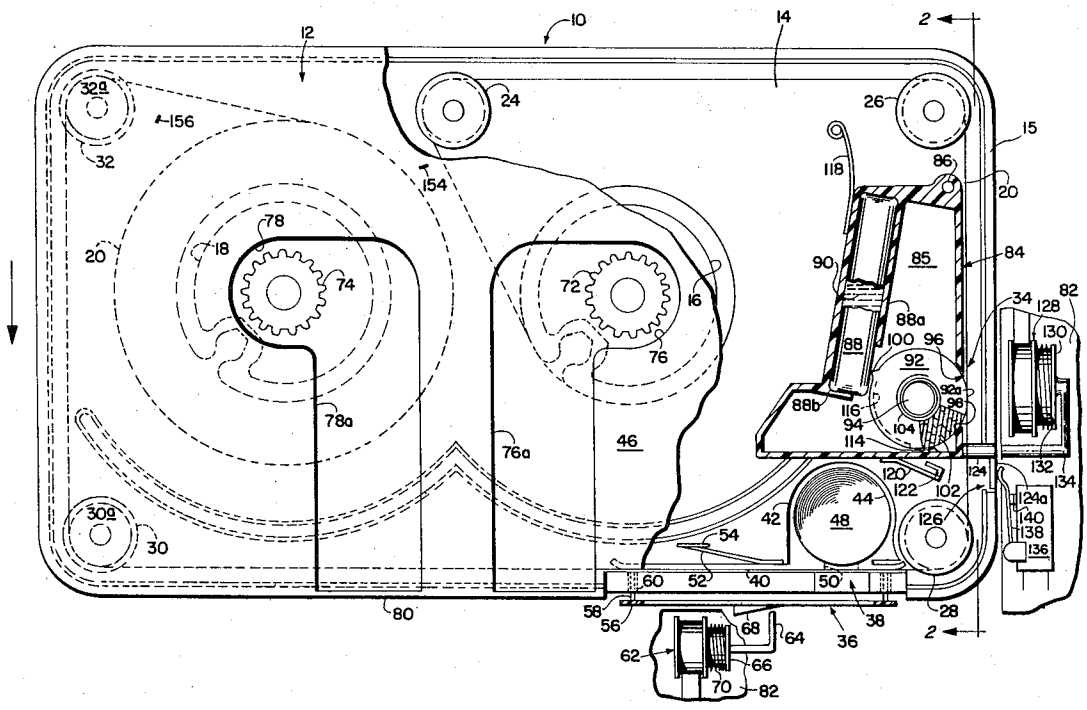
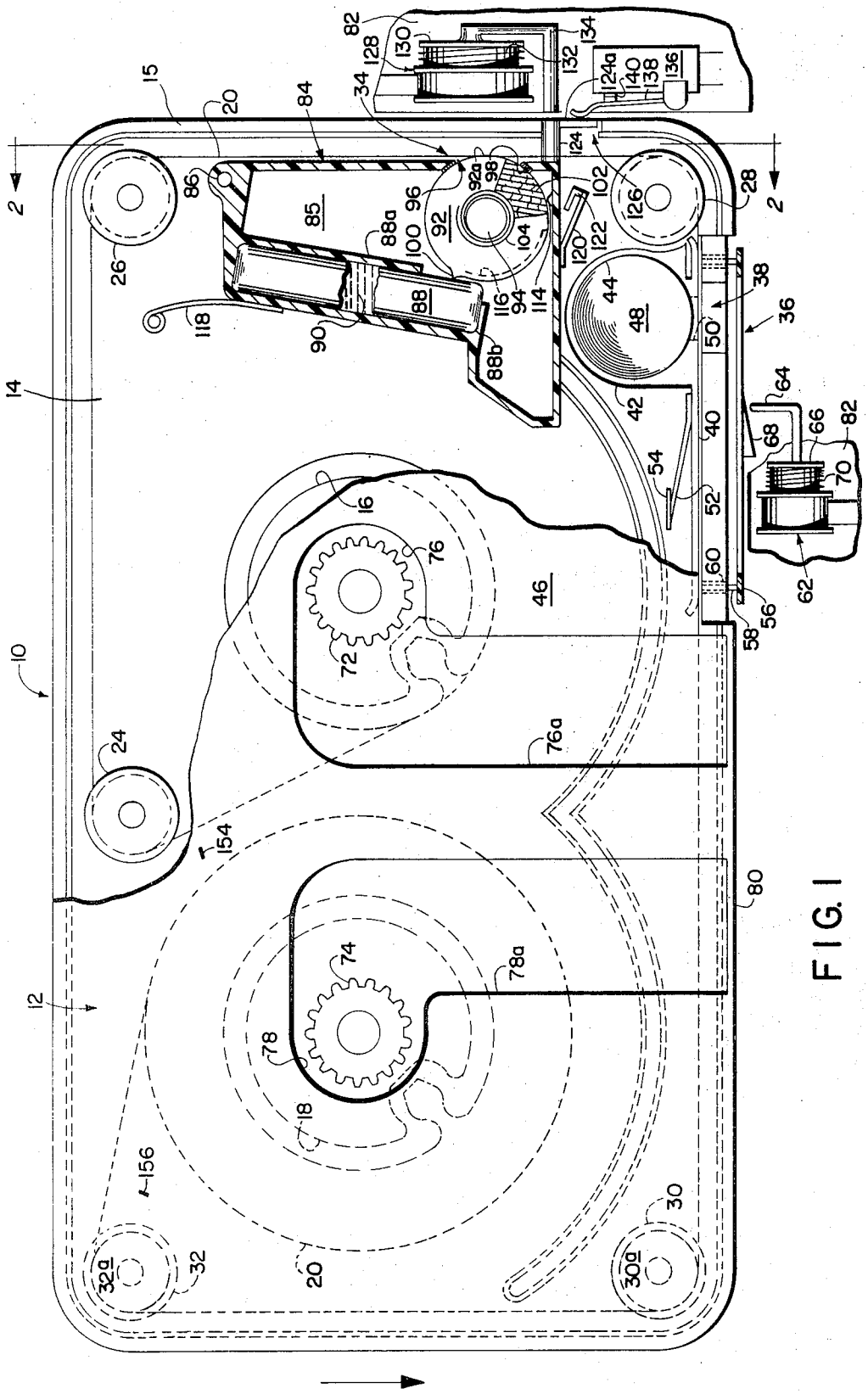
Primary Examiner—Monroe H. Hayes
Attorney, Agent, or Firm—David R. Thornton

[57] **ABSTRACT**

A multipurpose film handling cassette including an applicator system having processing fluid initially stored within a reservoir chamber. Extending between an interior of the chamber and the film is a, preferably cylindrical, applicator member having a plurality of capillary channels configured for conducting a metered amount of fluid to the film. In the preferred embodiment, the fluid is initially stored in a frangible pod, and the applicator cylinder includes a tang configured to tear open the pod and to subsequently cooperate with a stop so as to fixedly locate the channels in their functional location for fluid application. Tapered capillary channels are also disclosed which, responsive to variation in the rotational position of the cylinder, alter the rate of fluid flow to the film thereby permitting deposit of a uniform fluid layer on the film during non-uniform advancement of the latter.

42 Claims, 9 Drawing Figures

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128
130
134
132
124a
140
138
136
34
15
20
84
124
28
2
2
86
92a
98
102
126
85
96
92
104
122
120
26
88a
100
44
48
38
36
50
88
116
94
114
118
90
88b
14
42
64
40
66
82
68
70
54
52
16
76
46
62
60
56
58
10
72
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76a
154
80
74
78a
12
78
18
156
30
32a
32
20
30a

FIG. 1

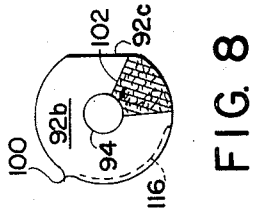


FIG. 8

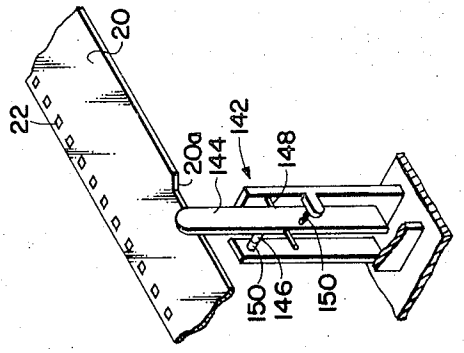


FIG. 7

FIG. 4a

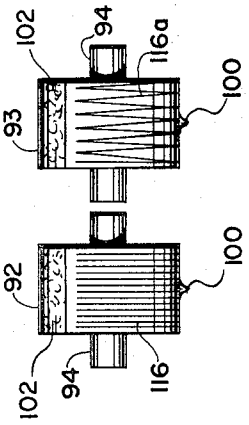


FIG. 4

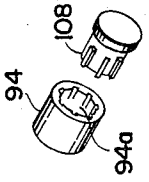


FIG. 3

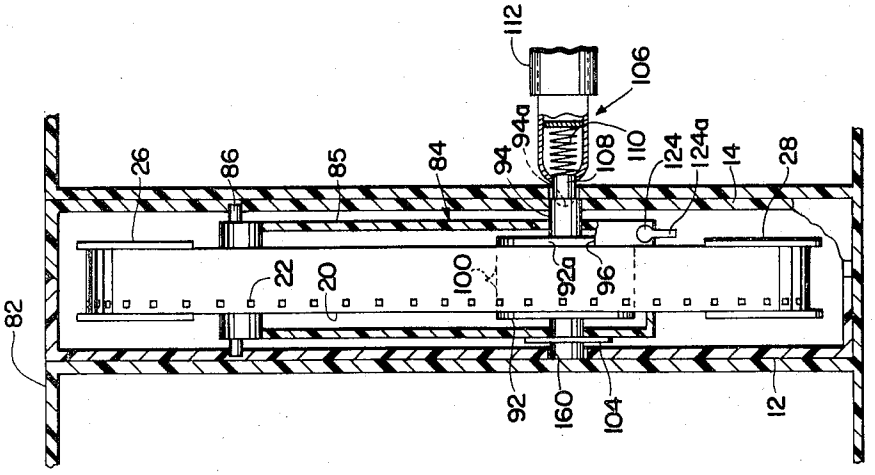
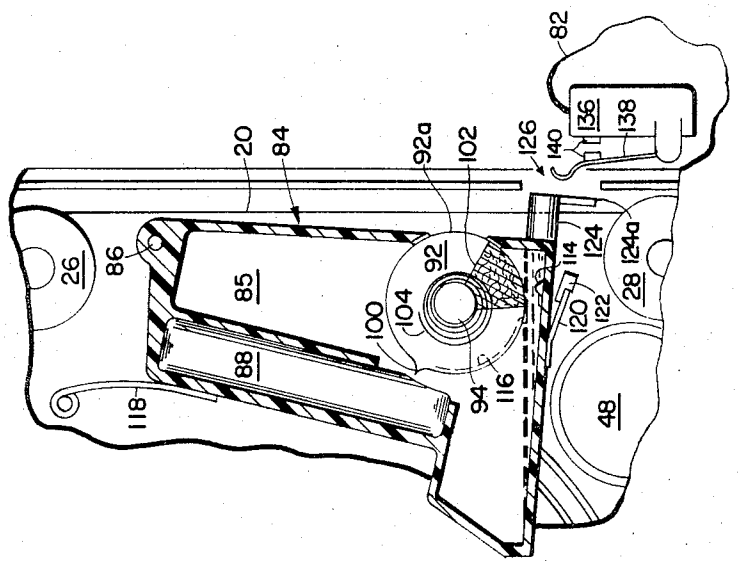


FIG. 2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136
138
20
84
92a
102
126
140
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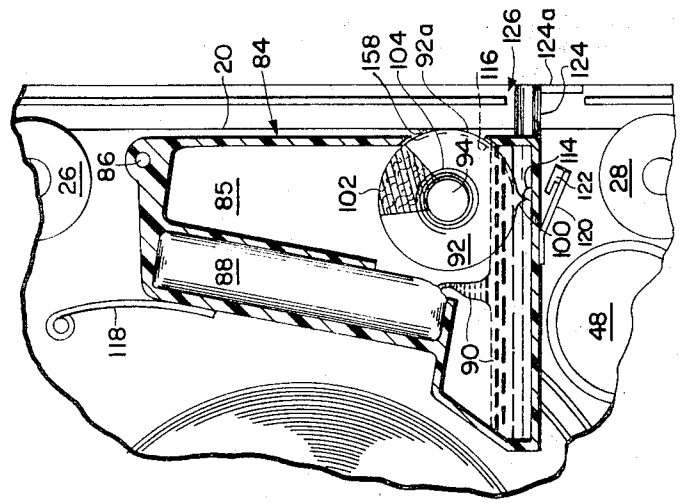
85
92
114
28
104
100
120
122
88
94
116
118
48

FIG. 6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84
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104
92a
116
126
124a
124
26
86
85
102
94
114
28
122
100
120
92
88
118
90
48

FIG. 5

PHOTOGRAPHIC CASSETTE SYSTEM HAVING ROTARY CAPILLARY APPLICATOR OF PROCESSING FLUID

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a photographic system, and particularly, to a photographic cassette system having an improved device for applying a uniform coating of processing liquid to a given length of exposed motion-picture film.

2. Description of the Prior Art

Recently, important technological advances in the motion picture arts have made it possible for the individual to effect processing and projection of motion-picture film substantially immediately after the pictures have been taken. Examplary of these advances in the art are systems described in U.S. Pat. No. 3,615,127 of Edwin H. Land issued on Oct. 26, 1971; U.S. Pat. No. 3,600,070 of Rogers B. Downey issued on Aug. 17, 1971; and U.S. Pat. No. 3,616,740 of Vaito K. Eloranta issued on Nov. 2, 1971. The systems described in the aforesaid patents employ a film-handling cassette in which the film is retained, untouched, during the entire operations of exposure, processing and projection. In general, these systems include a processing station for applying a thin, uniform coating of processing fluid to the film strip following its exposure. It is desirable that the processing station internally stores a suitable quantity of processing fluid and be capable of depositing a substantially continuous, uniform layer of the latter over the entire useful length of the film strip during its advancement. Hence, it is important that the processing station provide an applicator capable of being actuated at an appropriate time following exposure, and of subsequently depositing a precisely metered amount of fluid to the film strip.

These problems of achieving appropriate actuation of the processor and uniform coating of the film strip are, of course, further exemplified by the requirement that each cassette carry its own processor and further by the fact that the cassette and its components including the film must be capable of mass production manufacturing techniques and the tolerance levels incident to such techniques for the system to be acceptable in a competitive commercial market. Hence, it will be appreciated that the design and structural organization of the means by which the fluid is dispensed, are critical to the overall system in which the cassette is used.

Consequently, an important object of the invention is to provide an improved photographic system.

Another primary object is to provide an improved film handling cassette having an applicator for effectively applying a substantially uniform layer of processing fluid to a length of retained photographic film.

A further object of the invention is to provide an improved film handling cassette having a capillary type processing system.

A still further object of the invention is to provide a liquid applicator in which means are available for absorbing any excess of the liquid which may remain following its application to the film.

SUMMARY OF THE INVENTION

The present invention is directed to an improved system enabling motion-picture taking, processing and viewing in rapid sequence, wherein a compact cassette includes a reservoir container configured for receiving a processing fluid, the latter being metered by a device including a capillary component onto an exposed photographic film strip which is undergoing movement. The capillary component includes a member having a channelled surface extending from within the container into tangential contact with the film strip. Preferably, the fluid is initially stored in a frangible pod within the container, and the capillary component comprises a cylindrical member carrying a plurality of trough-like channels extending circumferentially over a given length of the cylinder periphery. A pointed, radial projection of the cylinder, providing means for releasing the fluid into the reservoir chamber responsive to cylinder rotation, is located at the trailing end of the capillary channels and cooperates with a stop within the chamber so that, following opening of the pod and release of its fluid, the capillary channels are located so as to extend along the curved surface between the fluid and the film strip.

In an alternate embodiment, the width of the channels taper from a point at their leading end to a wide mouth at the trailing end within the liquid such that the amount of fluid metered to the film varies in accordance with the location of line contact between the latter and the channels thereby permitting variation in the rate of fluid flow to the film in accordance with the rotational position of the cylinder member so as to compensate for variation in the speed of advancement of the strip past the applicator.

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 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 frontal view of a compact multipurpose motion-picture film-handling cassette embodying the features of this invention;

FIG. 2 is a diagrammatic sectional end view of the cassette taken along line 2—2 of FIG. 1;

FIG. 3 is a diagrammatic fragmentary perspective view of a coupling mechanism of FIG. 2;

FIG. 4 is a diagrammatic detail view of the drum component of FIGS. 1 and 2;

FIG. 4*a* is a detail view of an alternate embodiment of the drum component shown in FIG. 4;

FIGS. 5 and 6 are diagrammatic sectional views of the liquid applicator device of the invention illustrating two operational stages thereof;

FIG. 7 is a diagrammatic perspective view of a sensor switching means employed in operation of the cassette shown in FIG. 1; and

FIG. 8 is a diagrammatic fragmentary view of a further modification of the drum components of the invention.

DETAILED DESCRIPTION

The illustrated embodiment of this invention may best be understood by first reffering to FIGS. 1 and 2

of the drawings. As may be seen therein, a compact multipurpose film handling cassette **10** is basically constituted by front and rear housing sections **12** and **14,** respectively, and connected together to form an enclosed opaque housing.

In this embodiment, the cassette is relatively thin and generally rectangular parallelepiped in configuration. A supply spool **16** and a takeup spool **18** are coplanarly mounted within the cassette for rotation about spaced apart parallel axes. An unexposed length of motion-picture film **20,** provided with perforations **22** and with film leader and trailer affixed to the takeup spool **18** and to the supply spool **16,** respectively, is initially substantially entirely coiled around the supply spool. Passing from the supply spool **16** to the takeup spool **18,** the strip of film material sequentially travels around idlers **24, 26, 28, 30** and **32.**

Intermediate the idlers **26** and **28** the film **20** passes through a processing station **34** while intermediate the idlers **28** and **30** it passes through an exposure and projection station **36.** In this latter connection, a cut-out portion of the housing member **12** defines an exposure-projection opening **38** through a portion of which image-carrying light rays may enter or leave the cassette.

Mounted within the exposure and projection station **36** so as to be in alignment with its opening **38** is a pressure-plate assembly **40** having an integral frame-like recessed portion **42** having a frontal aperture **44** which is aligned with a similar aperture (not shown) of the front wall **12.** Mounted in recessed portion **42** is a light-reflecting element **48.** Also included in recessed portion **42** is an aperture **50** which extends through the pressure plate and is aligned with the cassette opening **38.** It will thus be noted that the light-reflecting element **48** redirects these rays outwardly of the cassette through the pressure-plate's aperture **50** and that section or frame of the film **20** disposed thereacross. Preferably the light-reflecting element **48** may have a configuration similar to the prismatic element described in more detail in the aforementioned copending application Ser. No. 767,609 of Herbert A. Bing.

The pressure-plate **40** is mounted within the cassette so that it may be displaced inwardly away from the film **20.** This movement is permitted against the biasing force exerted by a flat spring **52,** integral with the pressure-plate **40** and bearing against a fixed stud **54.** Recession of the pressure plate is thus made possible when rewinding of the film onto spool **16** is to be performed. An example of means for displacing the pressure-plate **40** is illustrated. An apertured plate **56** of a projection apparatus or the like (partially shown at **82** in FIG. **2**) is connected with the pressure-plate by a plurality of arms or pins **58,** the latter being slidably mounted for back-and-forth movement in a plurality of slots **60.** A solenoid **62,** mounted adjacent to the plate **56,** when energized slides a tang **64** at the extremity of the solenoid core **66** along the surface of a cam **68** located on the plate **56** so as to push this plate and the attached or contacted pressure-plate **40** inwardly away from film **20** against the bias of spring **52.** Upon de-energization, return movement of the core **66** and tange **64** is provided by the solenoid compression-spring **70.**

As in conventional motion picture apparatus, the film strip **20** is advanced during exposure and projection modes by a claw arrangement in cooperation with rotation of the film spools **16** and **18.** To facilitate driving of the latter for both forward and rewind of the film strip, a pair of spur gears **72** and **74** are mounted flush with the generally flat exterior surface of the cassette's front wall **12** within recessed portions **76** and **78** of the front wall and in axial connection to the film spools **16** and **18.**

Extending from a leading edge **80** of the cassette, in terms of the direction of its insertion into the projector apparatus **82** (FIG. **2**), into communication with the recessed portions **76** and **78,** respectively, are a pair of similarly recessed channels **76***a* and **78***a*. These channels **76***a* and **78***a* are spaced closer together than are the axes of the spur gears **72** and **74** so as to permit a pair of external coplanarly mounted driving spur gears (not shown) of a camera or projector to be displaced along the channels **76***a* and **78***a* from a position adjacent to the cassette's edge **80** into engagement with the cassette's spur gears **72** and **74.** When an externally mounted driving spur gear drives the takeup spool **18** in a clockwise direction exposure or projection of the film is performed. When an externally mounted spur gear drives the supply spool **16** in a counterclockwise direction, reversible transport of the film strip **20** from spool **18** to spool **16** is accomplished. Processing of the film is preferably performed during the last-named or rewinding operation.

The present invention is pointed toward the liquid-applicator and specifically related structure of the cassette and its mounting-unit. Accordingly, certain of the hereinbefore presented details of the cassette do not constitute part of the present invention and may take forms other than those described.

Components particularly relating to the subject invention are indicated at the processing station **34** of FIGS. **1** and **2.** As shown in these figures, the liquid-applicator device **84** basically comprises a substantially liquid-tight container or chamber element **85** pivotally mounted in the cassette at **86.**

Within the housing forming chamber **85** is a flangible sac or pod **88** hermetically holding a compatible processing liquid **90** of an aqueous type adapted to process the exposed motion-picture film **20** with extreme rapidity as it passes across the processing station **34.** A preferred type of film structure comprises both a photosensitive image-recording layer and an image-receiving layer in which, respectively, a developed negative image having a low silver covering power and a visible positive image having a high silver covering power are formed. This is accomplished upon application of the processing liquid by diffusion transfer of image-forming substances from the photosensitive layer to the image-receiving layer. Assuming the processed film to be in the form of a transparency suitable for projection, only the positive image, of dominant covering power or density, is visible. Film structures and processing substances of types which may be considered as relating to those contemplated herein are described in prior U.S. Pat. Nos. 2,726,154, 2,861,885 and 3,944,894 of Edwin H. Land, all of which are assigned to the assignee of the present invention. However, it is to be noted that the present invention is not directed to the chemistry of image formation. Accordingly, suitable film structures and processing liquids other than those above-suggested may be employed.

The pod **88,** preferably of a somewhat cylindrical shape and composed, for example, of a lead foil having plastic coating, is held against displacement by cham-

ber portions **88***a* and **88***b*. A roller or drum **92**, mounted on stub shafts **94** for rotation within the chamber **85**, have a peripheral portion **92***a* protruding through an aperture or slot **96** formed in that wall of chamber **85** which is adjacent to the film **20** as it passes between idlers **28** and **26**. Resilient sealing means **98** may be provided to prevent an unwanted escape of the processing liquid at the edges of aperture **96**.

A sharp, knife-like projection or tooth **100** extends radially outwardly from approximately the transverse peripheral center of the drum **92** for opening of the pod **88** as later explained in regard to operation of the processing station **34**. A liquid-absorbtive component **102**, e.g., a cellulosic sponge-like or blotting material in the form of a sector is inset into the drum **92** for absorption of the remaining liquid following completion of the processing operation and release of the roller **92** as later explained in regard to FIG. **6**. Hence, the sponge **102** cooperates with the opening **96** of the processor housing **85** to provide sealing means therefor. Fastened between the drum **92** or shaft **94** and the housing forming the chamber **85** is a torsion spring **104** which as later explained operates to return the drum to its initial position shown in FIG. **1**.

A plurality of minute parallel capillary grooves or channels **116**, of predetermined depth and length, are formed longitudinally, that is, circumferentially of a section of the peripheral surface of the drum **92** as shown more clearly in FIG. **4**. These capillary channels are of a width and depth such that the aqueous solution will flow through them by capillary action. Hence, they provide means for conducting a measured flow of the processing liquid **90** to the film, in a manner to be subsequently described in more detail with regard to FIG. **5**.

As shown in FIGS. **1** and **5**, a first or functional pivotal position of the liquid-applicator **84** is such that there is contact, in part, of that portion **92***a* of drum **92**, which extends through the housing aperture **96**, with the emulsion side of film **20** as it passes the processing station. This contact is maintained at a given pressure through bias applied to the liquid applicator **84** by a flat spring **118** bearing thereagainst. Accordingly, the film is held in a slightly tautened condition. Detent means for holding the liquid applicator **84** at a second pivotal position following its use comprises a flat resilient arm **120** and a stop **122** adapted to receive and hold fixedly the tip of the arm. Completing the description of the liquid applicator **84**, an integral stud or tang **124** projects laterally from the lower edge **125** of the former through a slot **126** formed in the end wall **15** of the cassette. The tang **124** as later explained is employed for facilitating displacement of the applicator to its second position and consequently, where the latter is in its initial position as shown in FIG. **1**, the end of the tange and a lateral projection **124***a* are substantially flush with the exterior of wall **15**.

Referring now to FIG. **2**, a driving or coupling mechanism **106** identified with the unit **82** is adapted to provide counterclockwise rotational movement of the drum **92**. Releasable engagement of the driving mechanism with the drum **92** is provided by contact of the convex and ridged plunger component **108**, under bias applied by compression spring **110**, with the concave fluted tip **94***a* (shown more clearly in FIG. **3**) of the stub shaft **94**. A slip-clutch **112** diagrammatically shown in FIG. **2** prevents damage to the mechanism through any excess of driving force. The clutch **112** is connected with driving means, e.g., an electric motor (not shown) of the mounting-unit.

Rotational movement of the drum **92**, in a counterclockwise direction as viewed in FIGS. **1**, **5** and **6**, is provided by the driving mechanism **106**. The limit of such rotation is determined by contact of the tooth **100** with a limit stop **114**. Return movement of the drum **92** in a clockwise direction is provided by the torsion spring **104**.

The pivotal mounting of the liquid-applicator **84** serves two principal functions, as follows. It provides contact of the drum **92** with the film **20** during rewind for processing purposes and it permits withdrawal of the drum from contact with the film **20** during projection or during rewind of an already processed film.

The pivotal movement of the applicator **84** is accomplished by solenoid means **128** of the projector apparatus **82**. These means comprise a (see FIG. **1**) solenoid **128** which includes a movable core **130**, a biasing compression-spring **132**, an actuating or impelling arm **134**, and a microswitch **136**. The latter includes a contact-arm **138** which is adapted for actuating the microswitch **136** upon contact with the tang **124***a*. Hence, the microswitch **136** is capable of sensing the position of the applicator **84** and thereby indicating whether the film **20** of a particular cassette has been processed. Additionally, upon completion of processing and the application through switch **136** of an appropriate signal to the solenoid **128**, which drives the applicator to its second position, the switch is thereby opened, and accordingly indicates that the cassette has been processed. In the latter position of the applicator **84** as shown in FIG. **6**, when the applicator **84** has assumed a tilted position, the detent arm **120** has entered the stop **122** and the applicator is held permanently in this position with the drum surface **92a** now being withdrawn from contact with film **20**

In the operation of the unit it is assumed that as shown in FIG. **1**, the cassette **10** has been removed from a camera (not shown) wherein the motion-picture film **20** has been photographically exposed during its passage across aperture **50** and is now substantially entirely wound upon the takeup spool **18**. At this time, the applicator is in its first position such that upon insertion in the projector apparatus **82**, the contacts **140** of microswitch **136** are forced closed thereby initiating operation of components of the projector resulting in the following. The solenoid **62** (see FIG. **1**) is energized so that the tang **64** is drawn against cam **68**, thereby relieving the film of contact by the pressure plate **40** at the exposure aperture. The coupling mechanism **106** shown in FIG. **2** engages the drum axis **94** and is energized to rotate the latter. The drum **92** commences rotation in a counterclockwise direction toward the position shown in FIG. **5** such that the tooth **100** penetrates and fractures the pod **88**, thereby releasing the processing liquid **90** which immediately assumes the position shown in FIG. **5**. During this rotation, the capillary area **116** is thereby prewetted. When rotation of the drum **92** has proceeded to the extent shown in FIG. **5**, it is held fixed against further rotation by contact of the tooth **100** with the limit stop **114**.

Upon completion of the foregoing, the supply spool **16** is appropriately rotated in a counterclockwise direction and the unprocessed film begins its movement across the processing station **34** into coiled arrange-

ment upon the supply spool. At this stage of the operation, and thence-forward until processing has been completed, the processing liquid **90** is supplied to the film **20** through capillary action, as provided by the capillary channels **116.** It will be noted in FIG. **5** that the lower extremities of the channels **116** are immersed in the processing liquid **90** while the upper extremities thereof are slightly above the point of contact of the drum **92** with the film **20,** and that a miniscus **158** of the processing liquid is formed slightly above this point of contact.

When the drum **92** is rotated such that its capillary surface **92** is in film contact, the fluid is dispersed to the film in a controlled manner. The drum provides displaceable capillary means configured for displacement between a first position out of film engagement and a second position wherein the capillary means extends from the fluid reservoir into tangential engagement with the film strip. Advantageously, while the cross section (the width and depth) of the capillary determine the flow to the film, the actual wetting of the film is over a greater area than such cross section since the film is brought into contact with the open edge of the channel, or that is, is in contact with fluid of the channel in a plane parallel to the longitudinal flow in the channel rather than normal thereto. Hence, improved wetting of the film results.

When processing of the film **20** is completed, the solenoid **128** is energized and the driving force of the coupling member **106** is relinquished in accordance with operation of the film sensor switch **142.** Operation of the solneoid **128** drives its arm **134** into engagement with the tang **124** and tilts the applicator **84** back to its disengaged position where it is permanently held out of firm engagement by the detent means **120** and **122,** as shown in FIG. **6.** Simultaneously, as the coupling member **106** is released, the drum **94** rotates to its original position under the urging of its torsion spring **104** and any remnant of the processing liquid is absorbed by the sponge **102.** It will be noted in FIG. **6** that the tang extension **124**a is now recessed in the slot **126** and that the contacts **140** of microswitch **136** are open. Accordingly, the cassette **10** is henceforth identifiable as one containing exposed and processed film and can be used as a permanent film-storage unit. A further description of indicating and sensing means of the film cassette and mounting unit enabling automatic operations of rewind, processing, take-up and projection is contained in the commonly assigned U.S. Pat. application Ser. No. 227,083 of Rogers B. Downey et al. filed on Feb. 17, 1972.

Assuming that the film **20** is of a "Super-8" type and of a 50′ length, a volume of 1.5–2cc. of processing liquid may be supplied in the pod **88.** Rotation of the drum **92** from a non-functional position and vice-versa is slightly in excess of 90°, as illustrated in FIGS. **5** and **6,** and occupies approximately 1 second. At completion of this rotational movement, the capillary grooves **116** are wetted sufficiently to initiate the capillary action and the film commences to move.

The stub shafts **94** are shown as extending through walls of cassette **12** in FIG. **2.** It is therefore to be assumed that short, slightly curved slots **160** are formed in the cassette walls to permit pivotal movement of the device **84.** Alternatively, however, the shafts **94** may terminate at the outer surface of the walls of the device **84** in which instance the slots **160** would be omitted. Although the drum like element **92** is illustrated as of a width greater than that of the film **20,** it is to be understood that it may be of a narrower width, for example, equal to the intermediate image portion of the latter whereby marginal portions of the film are untreated by the processing liquid.

An alternate means for spacing the drum from the film **20** at a given rotational position of the former is illustrated by the drum **92***b* of FIG. **8.** At a non-liquid-dispensing position of the drum, the flattened portion **92***c* would be located adjacent but in spaced relation to the film **20.** In this case, the drum forms essentially a cylindrical segment retaining capillary means on its curved surface which may be rotated from its rest position into and back out of fluid and film engagement without otherwise moving the processing structure.

In FIG. **4***a*, the drum **92** of, for example, ½ inch diameter and ⅜ inch width, has parallel capillary channels **116** formed which may, for example, be of equal width, spacing and depth, e.g., 0.010 inch and have a circumferential length of ⅜ inch. The capillary action may be considered as of a constant self-metering category in that the amount of processing liquid dispensed varies only with variation in the speed of film travel. Hence, in this arrangement, fluid flow is constant with film speed and has a maximum set by the capillary size. On the other hand, as shown in exaggerated size in FIG. **4***b*, the tapered capillary channels **115** in the drum **93** illustrate an alternate means for furthering a variable metering ability. Herein, the rate of flow of the processing liquid diminishes along the narrowing groove because of an augmented shear factor. Consequently, the rate at which the fluid is deposited on the film is, in this embodiment a function of both the rotational position of the drum with respect to the film strip and of the speed of the latter. Hence, the fluid flow to the film can be varied, for a given film speed, by slightly rotating the drum **93** to vary the width of channel between the point of film contact and the fluid reservoir. The latter arrangement is particularly useful in equipment where the film speed is not constant, for example, where the film is convolutely wound on a spool, driven a constant speed, such that the film starts at low speed and ultimately terminates at a maximum speed.

In such an arrangement, the drum **93** is first rotated (not shown) such that the bottom, wide portions **117** of the tapered channels **115** bridge the gap between the fluid of the reservoir and the film and provide a large fluid flow to the film (due to the large cross sectional capillaries) during the slow speed of the latter. Then, as the film speed increases during rewind, the drum is slowly rotated (clockwise in FIG. **5**) to bring narrower portions of the channels **115** into a bridging relation between the film and the reservoir. The latter reverse motion of the drum is provided by appropriate drive means such as means **106** of FIG. **2.** Advantageously, the surface area of the film in contact with the channel fluid and hence initially wetted is also reduced during accordingly. Hence, the tapered channels provided means for varying the rate of fluid flow to the film independent of film speed, and in this arrangement provide a limited flow which is slowly reduced with increased film speed to provide a controlled uniform fluid coating on the latter.

It will be understood that the subject invention may be practiced or embodied in other ways without departing from the spirit or character thereof. The preferred

embodiment described herein is, therefore, to be regarded as illustrative and not restrictive, the scope thereof being indicated by the appended claims and all variations which come within the meaning of the claims are intended to be embraced therein.

What is claimed is:

1. A film handling cassette comprising:
a housing configured for retaining a strip of photographic film material and for operable association with photographic apparatus for effecting at least film processing operations;
means for receiving a supply of processing fluid;
a coating cylinder having capillary means extending around a limited portion of the periphery thereof and configured for communicating with such received supply of processing fluid and an incremental section of such film strip to conduct such processing fluid thereto when said cylinder is rotated to an operative position to bring its said capillary means into bridging relation between such fluid and such incremental section; and
means for cooperating with such apparatus when said cassette is operably associated therewith for rotating said cylinder to its said operative position and for progressively advancing substantially the entire length of such film strip past said coating cylinder to effect the coating of such film strip with such fluid.

2. The cassette of claim 1 additionally including a processing station having a reservoir chamber configured for receiving such fluid, means for releasably storing such fluid, means for releasing such fluid from said storing means into said reservoir chamber responsive to rotation of said cylinder to its said operative position, and said coating cylinder being located with at least a portion of the periphery of said cylinder in said reservoir.

3. The cassette of claim 1 additionally including a reservoir chamber configured for receiving such source of fluid, said chamber having an aperture therein, and said coating cylinder being mounted in said chamber with a portion of its periphery extending through said aperture, and said cylinder being mounted for rotational displacement between an initial position wherein said capillary means are wholly within said chamber and an operational position wherein said capillary means extend through said aperture.

4. The cassette of claim 1 additionally including a processing station having a reservoir chamber configured for receiving such fluid, said coating cylinder being configured for location of at least a portion of the periphery thereof in said reservoir, means for releasably storing such fluid, means for releasing such fluid from said storing means into said reservoir chamber responsive to rotation of said cylinder to its said operative position, said means for releasing such fluid including means carried by said cylinder and configured for cooperation with said storing means for releasing such fluid responsive to rotational displacement of said cylinder from an initial position wherein said capillary means are not in film engagement and an operative position wherein said capillary means are in film engagement.

5. The cassette of claim 4 wherein said releasing means includes a projection located at a given point on said cylinder at one end of said capillary means, and said projection configured for engaging said storing means and for releasing the fluid therein during rotation of said cylinder to its said operative position.

6. The cassette of claim 5 including stop means configured for cooperating with said projection for stopping said cylinder in its said operative position.

7. The cassette of claim 6 wherein said fluid storing means is a pod-like member having at least a portion of tearable material, and said cylinder includes a projecting tang configured to pierce said portion and tear open said pod responsive to rotation of said cylinder.

8. The cassette of claim 1 additionally including means for biasing said cylinder to an initial position wherein said capillary means are not in bridging relation to such fluid and such film section.

9. The cassette of claim 8 wherein said biasing means includes a spring member configured for urging said cylinder in a given direction.

10. The cassette of claim 1 additionally including a reservoir chamber configured for receiving such source of fluid, said chamber having an aperture therein, and said coating cylinder being mounted in said chamber with a portion of its periphery extending through said aperture, said means cooperating with such apparatus for rotating said cylinder includes means for subsequently rotating said cylinder from its said operative position following treatment of such film strip with such fluid, and said cylinder includes means for sealing said chamber aperture responsive to said subsequent rotation of said cylinder from its operative position.

11. The cassette of claim 10 wherein said sealing means comprises an absorptive material mounted on the periphery of said cylinder.

12. The cassette of claim 11 wherein said material is a sponge-like material.

13. The cassette of claim 10 wherein said cylinder is mounted within said chamber for rotational displacement between an initial position wherein said capillary means are generally within said chamber and an operative position wherein said capillary means extends from the bottom of said chamber and through said aperture.

14. The cassette of claim 10 wherein said sealing means comprises a body of resilient material mounted on the periphery of said cylinder and configured to cooperate with said aperture when said cylinder is rotated so as to bring said material into engagement with said aperture.

15. The cassette of claim 1 additionally including a reservoir chamber configured for receiving such source of fluid, means for releasably storing such fluid, means for releasing such fluid from said storing means into said reservoir chamber responsive to rotation of said cylinder, said chamber having an aperture therein, and said coating cylinder being mounted in said chamber with a portion of its periphery extending through said aperture, and means for sealing said aperture responsive to rotation of said cylinder from its said operative position.

16. The cassette of claim 15, wherein said releasing means includes a projection located at one end of said capillary means and said sealing means includes an absorptive material located at the other end of said capillary means.

17. The cassette of claim 1 wherein said capillary means includes a plurality of capillary grooves arranged in spaced relationship and extending around a portion of the periphery of said cylinder.

18. The cassette of claim 17 wherein said capillary grooves are substantially uniform in cross-section throughout their length.

19. The cassette of claim 17 wherein each of said capillary grooves are substantially identical in cross-section.

20. The cassette of claim 17 wherein said capillary grooves have a uniformly decreasing cross-section such that the expression of such fluid may be varied in accordance with the portion of said grooves which are brought into film contact.

21. A film handling cassette comprising:

a housing configured for operable association with photographic apparatus for effecting at least film processing operations;

a strip of photographic material stored within said housing;

means for receiving a supply of processing fluid;

coating means including a rotatably mounted member, said member comprising at least an annular segment having capillary means extending along at least a limited portion of the length thereof and configured for communicating with such supply of processing fluid when it is received in said receiving means and an incremental section of said strip of photographic material so as to conduct such processing fluid thereto when said member is rotated to an operative position so as to bring its said capillary means into bridging relation between such fluid and such film segment; and

means for cooperating with such apparatus when said cassette is operably associated therewith for displacing said member to its said operative position and for progressively advancing substantially the entire length of said strip of photographic material past said coating member so as to effect the coating of said strip of photographic material with such fluid.

22. The cassette of claim 21 wherein said coating member comprises a cylinder having an indented portion, said capillary means comprising a plurality of capillary grooves extending along a portion of the curved periphery of said cylinder, and said cylinder being configured for rotation from an initial position wherein its indented portion is in adjoining relation to said film strip so as to permit passage of said film strip without contact to said cylinder and a second position wherein its said capillary grooves are in engagement with said film strip.

23. The cassette of claim 22 wherein said indented portion comprises a flattened portion of said cylinder periphery.

24. A film handling cassette comprising:

a housing configured for retaining a strip of photographic film and for operable association with photographic apparatus for effecting exposure, processing and projection operations;

means for receiving a supply of processing fluid;

coating means including a displaceably mounted member, said member comprising at least an annular segment having a plurality of capillary grooves extending along at least a limited portion of the outer curved surface thereof and configured for communicating with such supply of processing fluid when it is received in said receiving means and an incremental section of such strip of photographic material to conduct such processing fluid thereto when said member is displaced to an operative position to bring its said capillary grooves into bridging relation between such fluid and such film segment such that the open face of at least a portion of said grooves is in tangential contact with such film segment; and

means for cooperating with such apparatus when said cassette is operably associated therewith for displacing said member to its said operative position and for progressively advancing substantially the entire length of such of photographic material past said coating member to effect the coating of such strip of photographic material with such fluid.

25. The cassette of claim 24 wherein said capillary grooves are substantially uniform in cross-section throughout their length.

26. The cassette of claim 24 wherein said grooves are tapered so as to a decreasing cross-section throughout their length.

27. A photographic system comprising:

a photographic cassette comprising:

a cassette housing configured for retaining a strip of photographic film material and for operable association with other photographic apparatus for effecting exposure, processing and projection operations;

means for receiving a supply of processing fluid;

a coating cylinder having capillary means extending around a limited portion of the periphery thereof and configured for communicating with such supply 9 of processing fluid and an incremental section of such strip of photographic material to conduct such processing fluid thereof when said cylinder is rotated to an operative position to bring its said capillary means into bridging relation between such fluid and such incremental section; and

means for cooperating with other apparatus when said cassette is operably associated therewith for rotating said cylinder to its said operative position and for progressively advancing substantially the entire length of such film strip past said coating cylinder so as to effect the coating of such strip of photographic material with such fluid; and

an apparatus comprising:

a housing having means for receiving said cassette in an operative location therein; and

means for cooperating with said cylinder rotating means and said advancement facilitating means for rotating said cylinder to its said operative position and for progressively advancing such film strip there-across.

28 The system of claim 27 wherein said apparatus means includes first independent means for cooperating with said cylinder rotating means so as to rotate said cylinder and second independent means for cooperating with said advancement facilitating means for advancing such film across said cylinder.

29. The system of claim 27 wherein said cassette includes a processing station having a reservoir chamber configured for receiving such fluid, means for releasing such fluid from such source into said reservoir chamber responsive to rotation of said cylinder to its said operative position, and said coating cylinder being configured for location of at least a portion of the periphery of said cylinder in said reservoir.

30. The system of claim 27 wherein said cassette includes a processing station having a reservoir chamber configured for receiving such fluid, said coating cylinder being configured for location of at least a portion of the periphery thereof in said reservoir chamber, means for releasably storing such fluid, means for releasing such fluid from said storing means into said reservoir chamber responsive to rotation of said cylinder to its said operative position, said means for releasing such fluid including means carried by said cylinder and configured for cooperation with said storing means for releasing such fluid responsive to rotational displacement of said cylinder from an initial position wherein said capillary means are not in film engagement and an operative position wherein said capillary means are in film engagement.

31. The system of claim 30 wherein said releasing means includes a projection located at a given point on said cylinder at one end of said capillary means, and said projection configured for engaging said storing means and for releasing the fluid therein during rotation of said cylinder to its said operative position.

32. The system of claim 31 including stop means configured for cooperating with said projection for stopping said cylinder in its said operative position.

33. The cassette of claim 32 wherein said fluid storing means is a pod-like member having at least a portion of tearable material, and said cylinder includes a projecting tang configured to pierce said portion and tear open said pod responsive to rotation of said cylinder.

34. The system of claim 27 wherein said cassette includes a reservoir chamber configured for receiving such source of fluid, said chamber having an aperture therein, and said coating cylinder being mounted in said chamber with a portion of its periphery extending through said aperture, said cylinder being mounted for rotational displacement between an initial position wherein said capillary means are wholly within said chamber and an operational position wherein said capillary means extend through said aperture, and said apparatus means for rotating said cylinder including means for rotating said cylinder between its said initial and its said operational position.

35. The system of claim 27 wherein said cassette includes a reservoir chamber configured for receiving such source of fluid, said chamber having an aperture therein, and said coating cylinder being mounted in said chamber with a portion of its periphery extending through said aperture, said means for rotating such cylinder includes means for subsequently rotating said cylinder from its said operative position following treatment of such film strip with such fluid, and means responsive to said subsequent rotation of said cylinder from its operative position for sealing said chamber aperture.

36. The system of claim 27 wherein said cassette includes a reservoir chamber configured for receiving such source of fluid, means for releasably storing such fluid, means for releasing such fluid from said storing means responsive to rotation of said cylinder, said chamber having an aperture therein, and said coating cylinder being mounted in said chamber with a portion of its periphery extending through said aperture, and means for sealing said aperture responsive to rotation of said cylinder from its said operative position.

37. The system of claim 36 wherein said sealing means comprises an absorptive material mounted on the periphery of said cylinder.

38. The system of claim 27 wherein said capillary means includes a plurality of capillary grooves arranged in spaced relationship and extending around a limited portion of the periphery of said cylinder.

39. An applicator for applying a coating of processing fluid to a strip of photographic film material as such film strip is advanced past said applicator, said applicator comprising:

means for receiving a supply of processing fluid;

a coating cylinder having capillary means extending around a limited portion of the periphery thereof and configured for communicating with such received supply of fluid and at least an incremental section of such film strip so as to conduct such processing fluid thereto when said cylinder is rotated to an operative position, responsive to external means, to bring its said capillary means into bridging relation between such received fluid and such incremental section.

40. The applicator of claim 39 wherein said cylinder includes an indented portion, said capillary means comprise a plurality of grooves extending along a portion of the curved periphery of said cylinder, and said cylinder being configured for rotation from an initial position wherein its said indented portion is in adjoining relation to such film strip so as to permit free passage thereof without contact to said cylinder and a second position wherein said capillary grooves are in engagement with such film strip.

41. The applicator of claim 39 additionally including a housing, means for releasably storing such supply of fluid, and wherein said receiving means includes a chamber located in said housing and configured for receiving such fluid, said cylinder being located with at least a portion of its said periphery located in said chamber, and said applicator additionally including means responsive to rotation of said cylinder to its said operative position for releasing such fluid from said fluid storing means.

42. The applicator of claim 41 wherein said fluid storing means is a pod-like member having at least a portion of tearable material and said cylinder includes a projecting tang configured to open said pod and thereby release such fluid responsive to rotation of said cylinder to its said operative position.

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