March 9, 1954 E. H. LAND 2,671,389

FILM PROCESSING APPARATUS WHICH EMPLOYS LIQUID-CARRYING CONTAINERS

Filed Feb. 21, 1951

5 Sheets-Sheet 1

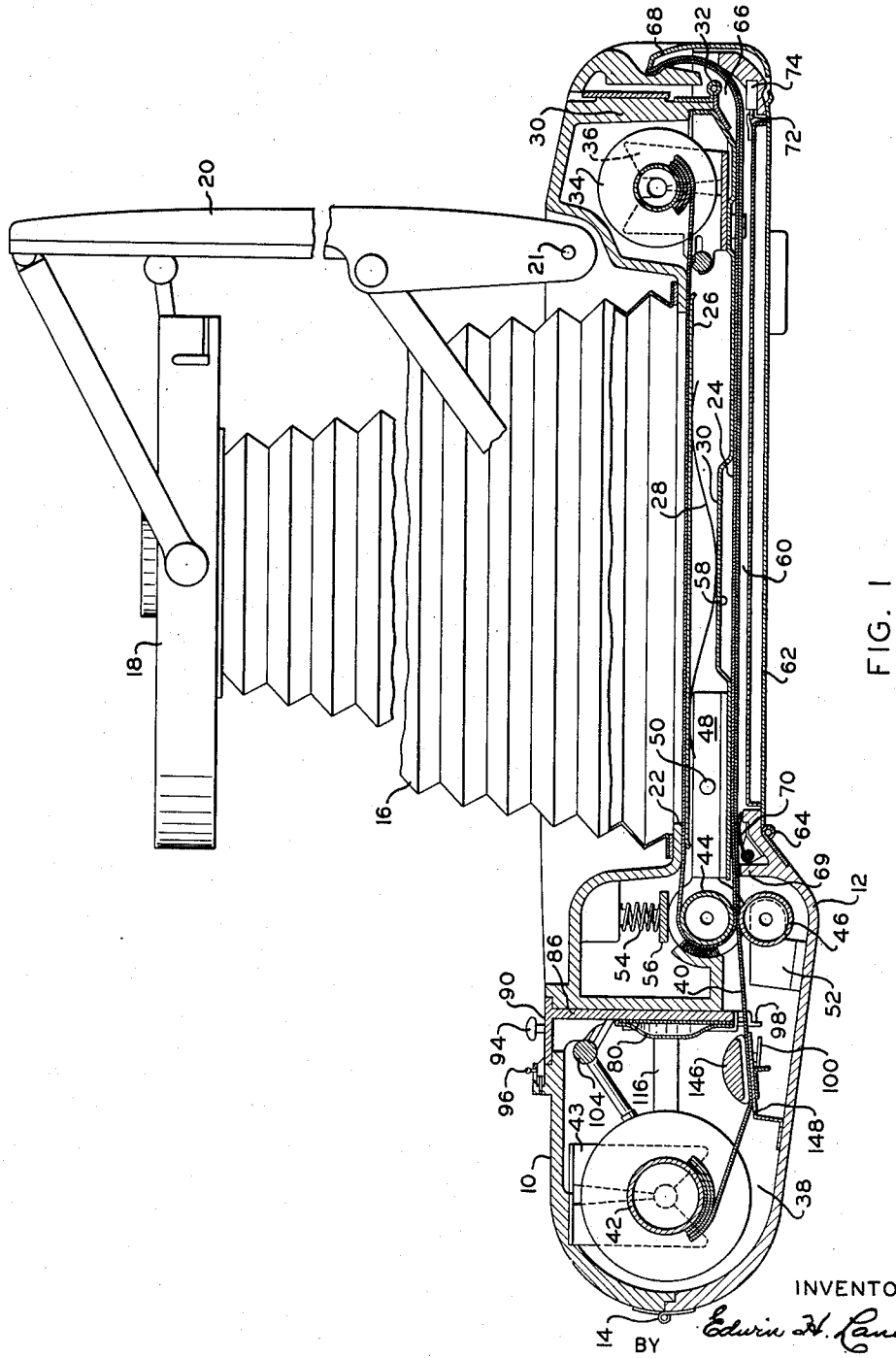


FIG. 1

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5 Sheets-Sheet 2

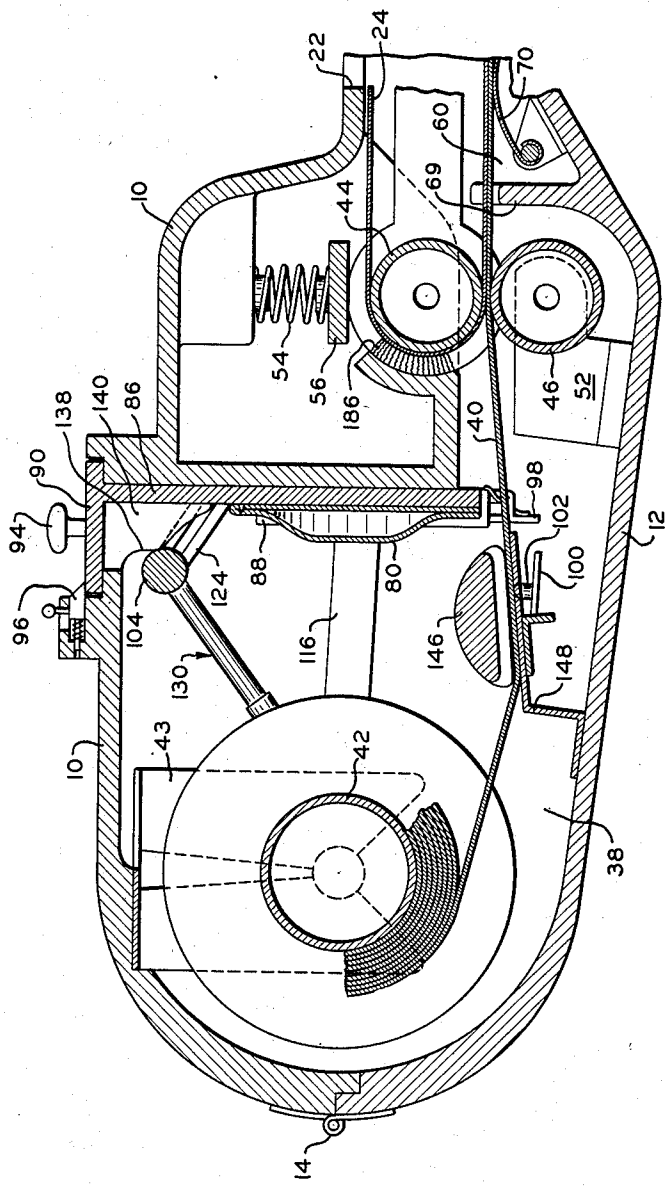


FIG. 2

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FILM PROCESSING APPARATUS WHICH EMPLOYS LIQUID-CARRYING CONTAINERS

Filed Feb. 21, 1951 5 Sheets-Sheet 3

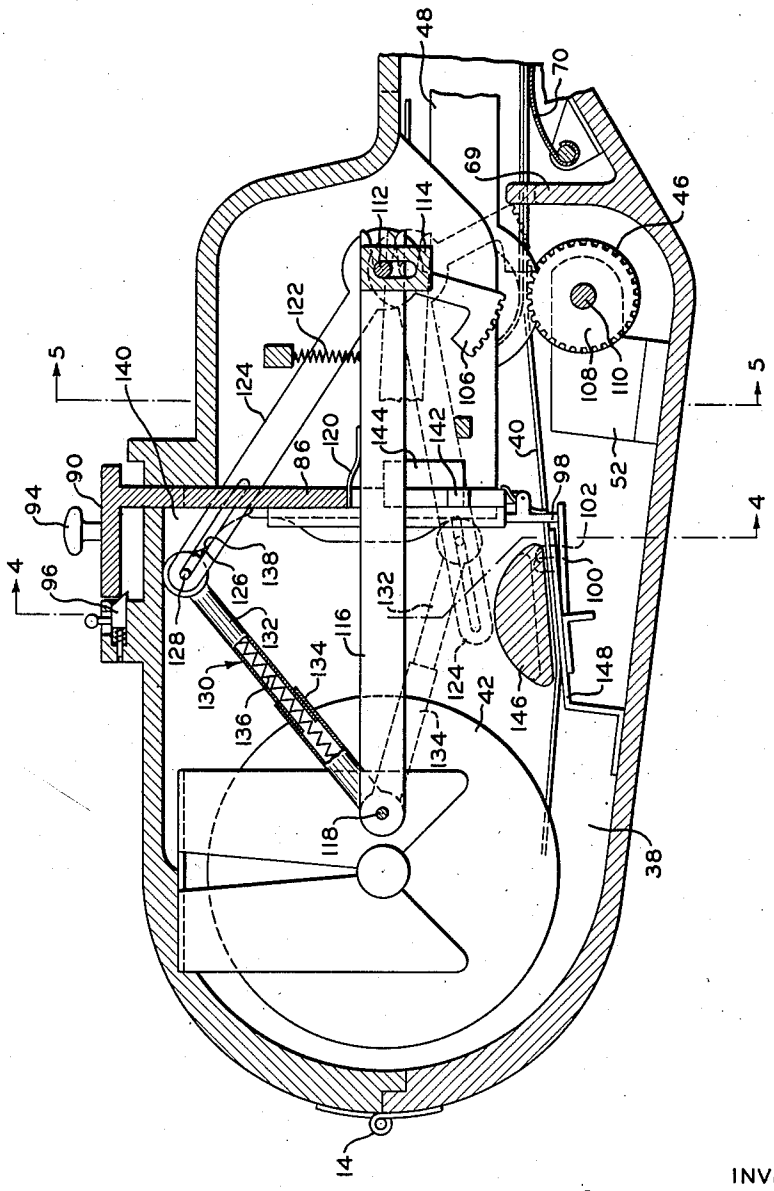


FIG. 3

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FILM PROCESSING APPARATUS WHICH EMPLOYS LIQUID-CARRYING CONTAINERS

Filed Feb. 21, 1951 5 Sheets-Sheet 4

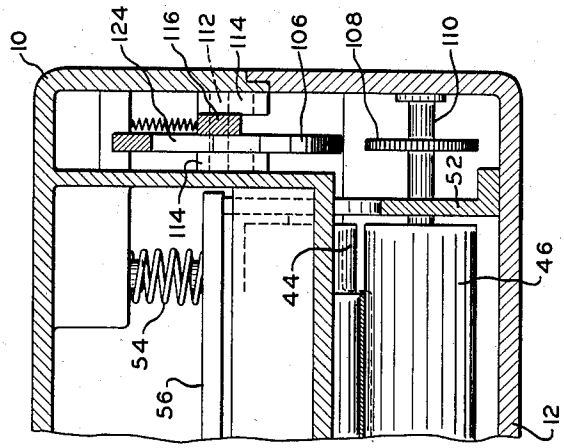


FIG. 5

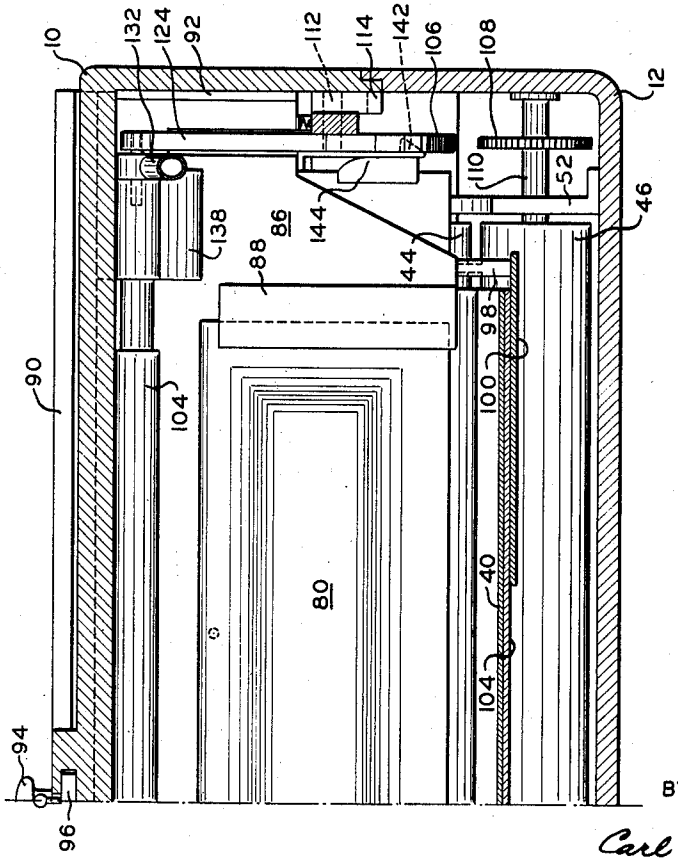


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FILM PROCESSING APPARATUS WHICH EMPLOYS LIQUID-CARRYING CONTAINERS

Filed Feb. 21, 1951 5 Sheets-Sheet 5

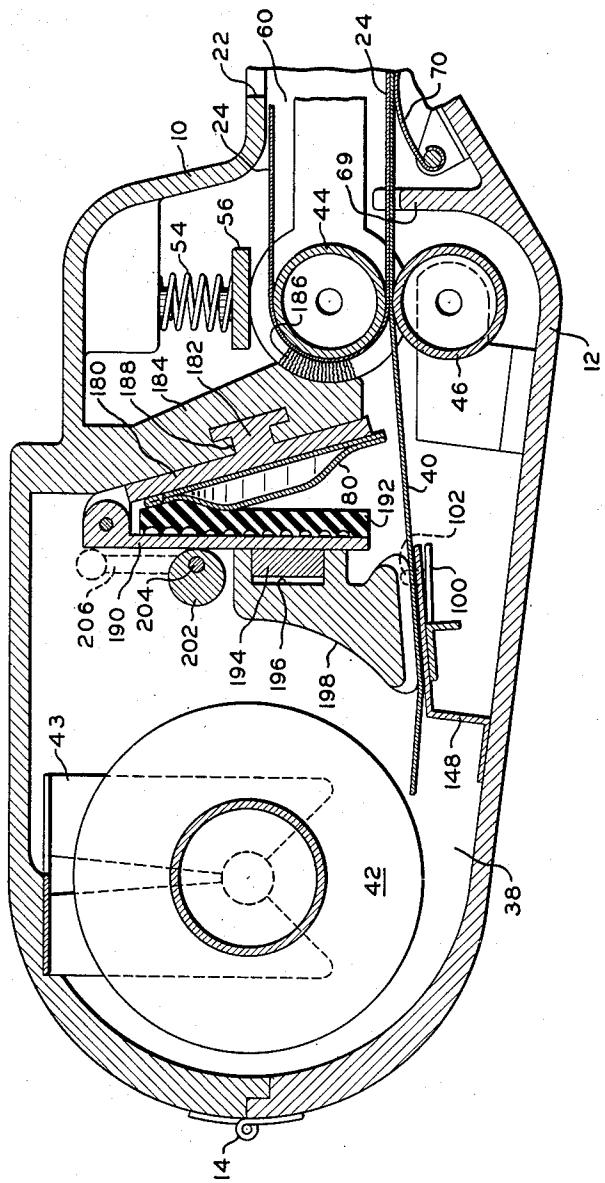


FIG. 6

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Patented Mar. 9, 1954

2,671,389

UNITED STATES PATENT OFFICE

2,671,389

FILM PROCESSING APPARATUS WHICH EMPLOYS LIQUID-CARRYING CONTAINERS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass., a corporation of Delaware

Application February 21, 1951, Serial No. 212,166

20 Claims. (Cl. 95—13)

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This invention relates to photography and more particularly to novel photographic apparatus, such as a camera, wherein a photosensitive sheet material may be processed by being brought into face-to-face relationship with another sheet material and by having the liquid of a container carried by one of said sheets released between said sheets. In a preferred form of the apparatus, negative and positive images are concurrently produced in the two sheets and there is also preferably provided a dark chamber in the apparatus into which the processed sheets are fed, the image-forming reactions being carried out while the sheets remain in this dark chamber.

The principal object of the present invention is to provide improved means in such an apparatus for fracturing a container and releasing a photographic processing liquid from said container, which container is carried independently of said sheets.

Another object of the invention is to provide improved means for releasing the liquid from said container as said sheets are advanced in face-to-face relation.

A still further object of the invention is to provide improved mechanism actuated by the liquid-spreading means and for preventing said sheets from advancing until the liquid container is moved to liquid supply position.

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

The invention accordingly comprises the apparatus possessing the construction, combination of elements and arrangement of parts which are exemplified in the following detailed disclosure, and the scope of the application of which will be indicated in the claims.

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

Figure 1 is a diagrammatic, fragmentary, sectional view of one preferred modification of the invention as embodied in a hand-held camera;

Fig. 2 is an enlarged, fragmentary, sectional view of the image sheet supply end of the camera;

Fig. 3 is a view similar to Fig. 2 but taken along line 3—3 of Fig. 4;

Fig. 4 is an enlarged, detailed, sectional view taken along line 4—4 of Fig. 3;

Fig. 5 is a fragmentary, sectional view taken along the line 5—5 of Fig. 3; and

Fig. 6 is an enlarged, fragmentary view, in section, similar to Fig. 2 but illustrating another embodiment of the invention.

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In a preferred type of hand-held camera embodying the present invention and illustrated in the drawings, the camera comprises a front housing, a rear housing and a partition extending between the two housings. Means are positioned in the camera for holding two sheets. In a preferred form, there is one such means adjacent to one end of the camera, for holding a supply, such as a roll, of the photosensitive film and means are provided preferably adjacent the other end of the camera for holding a supply, such as a second roll, of sheet-like material. An exposure opening is provided in the front housing and a door is included in the rear housing, the partition defining an exposure chamber with the front housing and defining a dark chamber with the rear housing. The camera also includes means for releasing a liquid from a container which is separate from said sheetlike materials. The camera also includes processing means preferably comprising a pair of pressure-applying members positioned between the exposure opening and the image sheet roll means and arranged to spread the liquid discharged from the container by said liquid-releasing mechanism between the two sheetlike materials in superposition between the pressure-applying members.

This invention is primarily directed to means for fracturing a container and releasing a photographic processing liquid from said container, which container is carried independently of the negative and positive sheets. In a preferred form of the invention there is provided a support for a container carrying therein a photographic processing liquid, and there is also preferably provided a means arranged, upon movement of said support into liquid-releasing position, to activate the container-fracturing and liquid-releasing mechanism. As illustrated, the container-fracturing and liquid-releasing mechanism comprises means arranged to be brought into pressure engagement with a liquid container mounted thereon and carrying a photographic processing liquid. Preferably, the pressure means is operated through connections to one of the pressure-applying members arranged to spread the processing liquid between the superposed negative and positive sheets. A preferred arrangement also includes means for preventing movement of the negative and positive sheets until the container mechanism is located in liquid-releasing position.

In a preferred type of image-carrying sheet,

the areas thereof adapted to carry the positive image are preferably defined by perforations which assist in the tearing out of these image area portions from the remainder of the sheet. In the normal use of a camera, when the two sheets are processed, this image area portion is positioned in superposition with the door so that, when the door is opened, this positive image area portion may be removed from the remainder of the image-carrying sheet by tearing along the perforations.

Referring now to the various figures, there is shown in Figs. 1 to 5, inclusive, one preferred form of the invention as embodied in a hand-held camera. This camera comprises a front housing 10 and a rear housing 12 pivoted thereto at 14. The front housing 10 has secured thereto a bellows 16 and a shutter housing, schematically indicated at 18. A cover 20, pivotally secured at 21 to front housing 10, suitably supports the shutter housing 18 in proper spaced relationship to the camera body. An exposure opening 22 in the front housing 10 permits exposure of a photosensitive sheet 24 supported behind this opening 22 by means of a backing plate 26. The backing plate 26 is supported by a spring member 28 on a partition member 30 hinged as at 32 to the front housing 10. Also preferably carried by the partition 30 is a spool holder 34 carrying a spool 36 of the photosensitive film 24. At the other end of the camera there is provided a chamber 38, preferably defined by front housing 10 and rear housing 12, for holding a roll of image-carrying sheet 40. The image-carrying sheet 40 is supported on a roll 42 mounted in suitable supports 43 fixed in any suitable manner to the front housing 10 of the camera. Each image-carrying sheet 40 includes spaced image area portions defined by a plurality of perforations (not shown).

The processing means, which is shown in the preferred form as being positioned between the end of the exposure opening and the holder for the image-carrying sheet 40, comprises a pair of pressure rollers 44, 46. The roll 44 is preferably carried by a pair of arms 48 pivotally mounted on the housing 10 by pins 59 (Fig. 1) and the pressure roll 46 is preferably carried by brackets 52 rigidly secured to the rear housing 12. A spring 54 and a pressure bar 56 apply a predetermined resilient load on the two rolls when they are in the position shown in Figs. 1, 2 and 3.

The rear surface 58 of the partition member 30 defines, with the rear housing 12, a dark chamber 60. A door 62 hinged at 64 is included in the rear housing 12 to provide access to the dark chamber 60. A discharge opening 66 in the right-hand end of the chamber 60 is normally closed by a cutter bar 68 positioned exteriorly thereof, this cutter bar 68 being arranged to permit severance of those portions of the two sheets which serve as leaders for moving a succeeding image area into the dark chamber 60.

The present camera is provided with means for preventing light from reaching the pressure rolls 44, 46 when the door 62 is opened. This light-sealing means comprises a bladelike member 70 mounted in the rear housing 12 and extending transversely of the dark chamber 60 between the end of the door 62 and the pressure rolls 44, 46. This light-sealing means is of the type disclosed in United States Patent No. 2,491,769, granted December 20, 1949, on an application filed in the name of Charles O. Rolando.

The camera is also provided with additional light-sealing means between the chamber 38 at the left-hand end of the camera and the dark chamber 60. This means comprises a wall member 69 which is preferably formed as an integral part of the rear housing 12. The intermediate portion of the wall 69 extends above the lower edge portion of the light seal 70 and below the plane of the lower surfaces 58 of the partition member 30. The end portions of the wall member 69 extend substantially above the plane of the surface 58 and the inner edge portions thereof form sheet-edge-guiding means for the two laminated sheets as they are advanced into the dark chamber 60.

In a preferred type of camera embodying the present invention, the rear door is provided with a timing device which operates to prevent opening of the door until a predetermined time after the positioning of the image- and negative-carrying sheets within the dark chamber 60. This timing device comprises a latch 72 and a timing mechanism 74 for operating the latch. The timing mechanism is preferably rendered operative to start its time cycle upon the movement of the cutting bar 68 from open position to the position shown in Fig. 1 of the drawings. At the end of a predetermined time after such a movement, the timing device releases the latch and the door 62 may be opened, at least a part of this opening being preferably accomplished by a spring (not shown). It is evident, however, that the timing mechanism may be rendered operative by some other portion of the camera such as the pressure rolls 44, 46 or the stop which positions the photosensitive and image areas prior to exposure.

The camera and the parts hereinbefore described are substantially the same as those described in the patent to Rolando hereinbefore referred to, to which reference may be had for a more detailed description of the various parts.

In the preferred form of process useful with the camera of the present invention, the photosensitive layer of the sheet 24 comprises a silver halide photosensitive emulsion carried by a suitable base, such as paper. With such an emulsion, the image-carrying sheet 40 preferably comprises a baryta paper. Photographic processing fluid is carried in suitable containers 80 which are supplied independently of the sheets and are supported in such position above the image-carrying sheet that fluid is released from the container and applied to the sheet as the sheet is fed forwardly between the pressure rolls 44, 46 prior to laminating the sheets for the processing operation in the dark chamber 60. The liquid carried by the containers 80 preferably comprises a viscous alkaline aqueous solution of the developer, a silver halide solvent and a film-forming material.

A preferred form of the camera comprises a die-cast aluminum body whose interior is painted black, the light-sealing blade being preferably formed of brass with certain other parts being formed of phosphor bronze, all of these elements being given a dull black finish.

As shown in Figs. 1, 2 and 3, the liquid container 80 is carried and supported by a plate-like member 86 which is provided adjacent to each end, as shown most clearly in Fig. 4, with grooved retaining members 88, which may be formed of metal and suitably secured to the plate 86 or, if so desired, may be formed integrally therewith and into which vertical edge portions of the container 80 are received. The outer end of the plate 86 is preferably provided with an integrally formed cover member 90 which, as

shown best in Figs. 1 and 2, is received in a recess in the front housing 10 of the camera. The shelf 86 is received in grooves preferably formed between upstanding ribs 92 formed at the sides of the front housing 10, as is shown most clearly in Fig. 4. The plate 86 is provided with a suitable handle 94 and is locked in position by a suitable spring-urged latch 96, which maintains the plate with the container 80 thereon in a predetermined liquid-releasing position relatively to the image-carrying sheet 40. The side portions of the plate 86 adjacent to the side edges of the sheet 40 are provided with downwardly extending pivoted members 98 which are arranged to engage resilient metallic plates 100 and to depress the said plates 100 to move stop members 102 carried by said plates 100 out of registration with suitable openings or perforations formed in the sheet 40. The sheet 40 is provided adjacent to each edge portion with suitably positioned perforations into which the stop members 102 are arranged to enter to prevent feeding or movement of the image-carrying sheet 40 and the negative sheet 24 until the shelf 86 and the container 80 thereon are suitably positioned in liquid-releasing position, as shown in Fig. 2 of the drawings, thus insuring that the image area portion of the sheet 40 and the image area portion of the negative sheet 24 will be in superposed relation when these sheets are moved or fed into the dark chamber 60.

The container 80 for the processing liquid is preferably one which can, by the application of mechanical stress thereto, be caused to release its contained liquid. A preferred type of container is one so formed that mechanical stress applied thereto will cause one edge of the container to be opened to release the liquid from this edge. The liquid container 80 is preferably formed of a paper-backed metal foil coated at the inner surface thereof with a synthetic resin, such as polyvinyl butyral, which is inert to alkalis. The container as illustrated in Fig. 4, for example, preferably extends transversely of the image-carrying sheet 40 with the weakened edge thereof located adjacent to the image-carrying sheet 40. The sheet is folded upon itself and sealed at the ends and along the edge opposite the fold, the end seals being preferably stronger than the edge seal. Thus, after the photo-sensitive sheet 24 has been exposed and prior to moving the exposed area into the dark chamber 60, the processing liquid in the container 80 will be released and fed to sheet 40 and on the image area portion thereof. The resiliently mounted rolls 44, 46 are effective to spread the liquid uniformly over the image area portion of the sheet 40. The processing liquid is sufficiently viscous to cause the sheets 24, 40 to adhere to each other and thus uniform permeation of at least the photo-sensitive layer of the sheet 24 is effected.

In a preferred embodiment of the invention, the container 80 is mounted on the plate 86, as shown in Fig. 2, and is arranged to be fractured, and the liquid contained therein released, by a pressure roll 104 which is arranged to be moved downwardly to apply mechanical stress to the container 80 and to collapse said container to expel the liquid contained therein.

Referring now to Fig. 3 of the drawings, it will be noted that the stop member 102 is in registration with suitable perforations in the image-carrying sheet 40. When the plate 86 carrying the container 80 is moved into the position shown in Fig. 2, the stops 102 are moved out of registration with the perforations so that the sheet 40 may be fed into the dark chamber 60. Movement of the plate 86 into the position shown in Fig. 2 is effective to move gear segments 106 into mesh with gears 108 fixed to ends of the shaft 110 on which the pressure or spreading roll 44 is also secured. The gear segments 106 each form one arm of a bell-crank lever which are each mounted on pivots 112 movable in slots formed in bosses 114 at the sides of the front housing 10 of the camera. Each of the pivots 112 is received in a slot formed in the free ends of levers 116 pivoted at 118 to the sides of the front housing 10. During the final portion of the movement of the container support into liquid-releasing position, flat springs 120 fixed thereto engage levers 116 and swing the levers 116 about their pivots, carrying with them the gear segments 106 which are moved into mesh with the gears 108.

The levers 116 are normally urged in a direction away from the gears 108 by suitable tension springs 122. The upper portion of each arm 124 of the bell crank levers is provided with a longitudinal slot 126 which receives the ends of the shaft 128 on which the pressure roll 104 is mounted. The roll 104 is normally biased toward the container support 86 by a pair of arms 130 pivoted at one end to the pivots 118 and pivotally secured at their other ends to the roll shaft 128. Each arm or link 130 comprises a pair of telescoping tubular members 132, 134 spring-urged in a separating direction by compression springs 136. To permit unimpeded access of the container-carrying support 86 into the housing 10, the end portions of the roll 104 ride over cam surfaces 138 formed on members 140 formed integrally with the front housing 10 of the camera.

When the parts are in the position shown in Fig. 2, with the container-carrying support 86 in liquid-releasing position, the gear segments 106 are in mesh with the gears 108. The cutting bar 68 is swung to open position, thus providing access to the ends of the superposed sheets 24, 40. As these sheets are drawn out of the dark chamber 60, the pressure rolls 44, 46 are rotated. Since the gears 108 are fixed to the shaft 110 of the pressure roll 46, the gear segments 106 in mesh therewith are also rotated, causing the arms 124 of the bell-cranks to be swung in a counterclockwise direction to carry the roll 104 downwardly into contact with the liquid-carrying container 80 to release processing liquid therefrom onto the image area of the sheet 40 therebelow. When the pressure roll 104 passes beyond the dead center position, the springs 136 are effective to move the roll 104 into the position shown in dotted lines in Fig. 3 with the segments 106 out of mesh with the gears 108. The parts are returned to the full-line position shown in Fig. 3 upon withdrawal of the container support 86 from the front housing 10 of the camera. Each end portion of the support 86 is provided with a latch member 142 (Fig. 4) which is preferably formed of spring material such as brass or beryllium copper. The latch members 142 are so arranged that they will not engage the levers 116 upon insertion of the support 86 into the housing 10. These latches 142, however, are arranged to engage cam surfaces 144 formed in the lower side edge of the wall 69 during the lower limits of the movement of said support 86 into and out of liquid-releasing position. Thus, the spring latches 142 are positioned to engage the levers 116 during withdrawal of the support 86 from the housing 10

until the links 130 pass dead center, when the lower ends of the latches 142 pass beyond the upper ends of the cam surfaces 144 and the roll 104 is returned to the position shown in Fig. 3 by the springs 136 in the links 130.

In order to maintain tension on the sheet 40 during the feeding operation a pressure member 146 is provided which is mounted at its ends to the sides of the rear housing 12 and the sheet 40 is resiliently maintained in engagement therewith by a flat plate member 148 which is suitably secured to the rear housing 12.

The modification shown in Fig. 6 of the drawings is illustrated as embodied in a hand-held camera of the type shown in Fig. 1. The liquid container 80 is supported in a slide 180 which is inserted into the camera through a suitable opening in the side thereof and which preferably is provided with a suitable cover (not shown) for preventing entrance of dust and the like into the interior of the camera. The slide 180 is provided with an integrally formed T-shaped member 182 which extends longitudinally of the slide 180 and transversely of the camera. The front 10 of the camera is provided with a depending wall 184 which forms, together with a light trap 166, a lighttight partition between the chamber 38 and the dark chamber 60. The wall 184 is provided with a transversely extending slot 188 arranged to receive the T-shaped member 182 and in which the member 182 is arranged to slide to carry the liquid container 80 into liquid-releasing position.

The slide 180 has hingedly secured thereto a pressure member 190 having on its container-engaging surface a yieldable pad 192 formed of rubber or other suitable resilient material. The pressure member 190 is provided with a longitudinally extending rib 194 which fits into a slot 196 in a member 198 which presses against the sheet 40 and maintains pressure thereon. The member 198 adjacent to the slot 196 engages and forms a stop for the pressure member 190. The upper end of the pad 192 is shaped to coincide with the upper edge portion of the container 80. The member 190 is swung about its hinge and toward the container 80 by an eccentric 202 fixed to a shaft 204 extending transversely of the chamber 38 and extending beyond one side of the housing. A handle 206 is fixed to the projecting end of the shaft 204 and, when moved in a clockwise direction as viewed in Fig. 6, rotates the eccentric 202 and causes the pressure member 190 to be moved until the container 80 is entirely collapsed and all of the processing liquid expelled therefrom. The processing liquid is thus deposited on the sheet 40 and is spread uniformly over the image area portion thereof by the pressure rolls 44, 46 as the sheet 40 is fed forwardly into the processing chamber 60. When manual pressure on the handle 206 is released, the pressure of the upper edge portion of the resilient pad 192 against the upper edge of the container 80 will return the eccentric 202 and the pressure member 190 to the position shown in Figure 6.

While the invention has been described in detail, it may be well for a clearer understanding thereof to describe briefly how supplying sheet materials and photographic processing liquid to the camera of Figs. 1 to 5 is accomplished. The camera is opened in the usual manner by rotating the rear housing 12 about a hinge 14 to expose the spool holders 34 and 43. The spool 36 carrying a photosensitive sheet 24 is inserted in the spool holder 34 and the leader portion of the photosensitive sheet 24 is led across the exposure

opening 22, positioned between the pressure rolls 44, 46, around the pressure roll 44 and backwardly across the partition member 30 which previously has been replaced in position. The leader portion of the sheet 24 then extends beyond the right-hand end of the front housing 10. The spool 42 carrying the positive sheet 40 is placed in the spool holder 43, is brought under the pressure member 146 between the pressure rolls 44, 46 underlying the photosensitive sheet 24. The leader end of the image-carrying sheet 40 is then drawn from the spool 42 until a mark or other suitable indicating means is brought into coincidence with similar means on the sheet 24 which serves to align the image area on the sheet 40 with the photosensitive area of the photosensitive sheet 24 after the latter area has been exposed and the superposed sheets moved into processing relation, as will hereinafter be described. The rear housing 12 is then moved to closed position, thus bringing the pressure roll 44 into pressure engagement with the pressure roll 46. This movement of the rear housing 12 also brings the spring arm 70 into position so that it resiliently engages the marginal edge of the rear surface of the partition member 30. The leaders on the two sheets are then pulled until the first photosensitive area of the photosensitive sheet 24 is in exposure position below the exposure opening 22 and further movement of the two sheets is prevented by the stop 102 entering a perforation in the sheet 40. This movement of the leaders advances the corresponding portion of the image-carrying sheet 40 from the spool 42 so that it will underlie the photosensitive area of the sheet 24 when the sheets are advanced into the processing chamber following exposure of the photosensitive sheet 24. The excess leader stock may now be cut off by moving the cutter bar 68 into position and tearing the leader stock against the bar 68. A liquid-carrying container 80 is then placed in the holder 86 and the holder 86 is moved into the position shown in Fig. 4. During the latter portion of this movement, the arm 116 is swung downwardly to cause the segments 106 to be brought into mesh with the teeth on the gear 108 fixed to the shaft 110 on which the pressure roll 44 is carried. This movement also moves the stop 102 from the position shown in Fig. 3 to the releasing position shown in Fig. 2. After an exposure has been made the cutter bar 68 is swung downwardly to permit access to the ends of the leaders of the sheets 24 and 40 and the sheets are pulled to move the exposed photosensitive area of the sheet 24 into engagement with the image area of the sheet 40. During this movement, the roll 104 is swung downwardly into pressure engagement with the liquid-carrying container 80 to discharge liquid therefrom on the image area of the sheet 40 as the sheet 40 and the sheet 24 are advanced between the pressure rolls 44, 46 and into the processing chamber. After the two sheets have been moved into the processing chamber so that the photosensitive portion of the sheet 24 and the image area of the sheet 40 substantially underlie the door 62 of the rear housing 12, a mark or other suitable means on the leaders will determine the end of the movement into the processing chamber. The cutter 68 will then be swung back into the position shown in Fig. 1 and the excess leader material cut off as hereinbefore described. After the processing operation has been completed the door 62 is opened and the perforated image-carrying

area with the image thereon is then removed from the camera in the usual manner.

Although the foregoing structure has been described by way of example as being embodied in a hand-held camera, it is to be expressly understood that the novel combination of the container-holding and -rupturing means and the liquid-spreading means, as hereinabove described, may be used for many other photographic purposes, for example in apparatus for copying documents or for just processing photosensitive film that has been exposed elsewhere than in said apparatus.

It is believed to be apparent also that the dark processing chamber which receives the two sheets after the liquid is spread therebetween is not essential to the proper functioning of the apparatus where the two sheets are opaque to light actinic to the photosensitive layer. In the latter event, the superposed sheets may be ejected directly from the apparatus into the open without danger of fogging the photosensitive layer. The term "photosensitive" as used herein is to be understood as covering silver halide emulsions and other photosensitive materials which are actinic not only in the visible and near visible light but also to nuclear radiation so that the devices of the present invention are useful for such purposes as measuring dosages of nuclear radiation.

While preferred forms of the invention have been described above, it should be understood that various other modifications of the specific constructions shown may be accomplished without departing from the scope of the invention.

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

What is claimed is:

1. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces to said container, said quantity being slightly in excess of the minimum required for spreading a layer of predetermined depth and extent between said sheets, said apparatus comprising a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced through said region from one side of said region to the opposite side thereof, locating means movable in a predetermined path for directing said container from a first position remote from said region to a second position adjacent to said region on said one side thereof and adjacent to at least one of said portions, guide means associated with said housing for constraining said locating means for movement in said predetermined path, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said second position in order to cause ejection of processing liquid therefrom onto said one portion, said second pressure-applying means being normally deactuated, and means mechanically operatively connected to said second pressure-applying means for actuating said second pressure-applying means, advancement of said associated portions through said region causing superposition thereof with a layer of processing liquid therebetween.

2. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces to said container, said quantity being slightly in excess of the minimum required for spreading a layer of predetermined depth and extent between said sheets, said apparatus comprising a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced through said region from one side of said region to the opposite side thereof, support means movable in a predetermined path for carrying said container from a first position remote from said region to a second position adjacent to said region on one side thereof and adjacent to at least one of said portions, said support means providing a surface against which said container is adapted to abut, guide means associated with said housing for constraining said support means for movement in said predetermined path, a second pressure-applying means which, when actuated, is adapted to cooperate with said surface of said support means in order to exert pressure on a container located at said second position and to cause ejection of processing liquid from said container onto said one portion, said second pressure-applying means being normally deactuated, and means mechanically operatively connected to said second pressure-applying means for actuating said second pressure-applying means, advancement of said associated portions through said region causing superposition thereof with a layer of processing liquid therebetween.

3. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a predetermined quantity of processing liquid therewithin and a sealed mouth through which said processing liquid may be dispensed upon application of compressible forces to said container, said apparatus comprising a housing, first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced from one side of said region to the opposite side thereof, support means for mounting said container, said support means being movable from a position at which said container may be mounted thereon to a predetermined position at which the mouth of a container mounted thereon is adjacent said region on said one side thereof and adjacent to at least one of said portions, guide means associated with said housing for constraining said support means for movement into said predetermined position, second pressure-applying means comprising a member adapted to cooperate with said support means when said support means is in said predetermined position in order to cause ejection of processing liquid through said mouth onto said one portion, said second pressure-applying means being normally deactuated, and means for actuating said second pressure-applying means, advancement of said associated portions through said region causing superposition

thereof with a layer of processing liquid therebetween.

4. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a predetermined quantity of processing liquid therewithin and a sealed mouth through which said processing liquid may be dispensed upon application of compressible forces to said container, said apparatus comprising a housing, first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced from one side of said region to the opposite side thereof, said housing providing an opening through at least a wall thereof, guide means associated with said housing and being accessible through said opening, a support for said container, said support being movable through said opening and into engagement with said guide means, said guide means being adapted to locate said support at a predetermined position so that a container mounted thereon is adjacent to said region on said one side thereof and is adjacent to at least one of said portions, and a second pressure-applying means for exerting pressure on said container mounted on said support in order to cause ejection of processing liquid onto said one portion, advancement of said associated portions through said region causing superposition thereof with a layer of processing liquid therebetween.

5. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a predetermined quantity of processing liquid therewithin and a sealed mouth through which said processing liquid may be dispensed upon application of compressible forces to said container, said apparatus comprising a housing, first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced from one side of said region to the opposite side thereof, said housing providing an opening through at least a wall thereof, guide means associated with said housing and aligned with said opening, a support for mounting said container, said support being movable through said opening and into said housing, movement of said support within said housing being constrained by said guide means, means associated with said guide means for locating said support at a predetermined position so that a container mounted thereon is adjacent to said region on said one side thereof and is adjacent to at least one of said portions, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container mounted on said support in order to cause ejection of processing liquid onto said one portion, said second pressure-applying means being normally deactuated, and means for actuating said second pressure-applying means, advancement of said associated portions through said region causing superposition thereof with a layer of processing liquid therebetween.

6. A photographic apparatus for processing a photosensitive sheet in conjunction with at least a container associated with said sheet, said container having a predetermined quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces thereto, said apparatus comprising a housing, a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, portions of said sheet being adapted to be advanced through said region from one side of said region to the opposite side thereof, locating means movable in a predetermined path for directing said container from a first position remote from said region to a second position adjacent to said region on said one side thereof and adjacent to at least one of said portions, said locating means providing a surface against which said container is adapted to abut, guide means associated with said housing for constraining said locating means for movement in said predetermined path, a second pressure-applying means which, when actuated, is adapted to cooperate with said surface of said locating means in order to exert pressure on a container located at said second position and to cause ejection of processing liquid therefrom onto said one portion, said second pressure-applying means being normally deactuated, and means mechanically operatively connected to said second pressure-applying means for actuating said second pressure-applying means, advancement of said portions through said region causing spreading of a layer of processing liquid on said portions.

7. A photographic apparatus for processing a photosensitive sheet in conjunction with at least a container associated with said sheet, said container having a predetermined quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces thereto, said apparatus comprising a housing, a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, portions of said sheet being adapted to be advanced through said region from one side of said region to the opposite side thereof, said housing providing an opening through at least a wall thereof, guide means associated with said housing and being accessible through said opening, a support for said container, said support being movable through said opening and into engagement with said guide means, said guide means being adapted to locate said support at a predetermined position so that a container mounted thereon is adjacent to said region on said one side thereof and is adjacent to at least one of said portions, and a second pressure-applying means for exerting pressure on a container mounted on said support in order to cause ejection of processing liquid onto said one portion, advancement of said one portion through said region causing spreading of a layer of processing liquid over said portions.

8. A photographic apparatus for processing a photosensitive sheet in conjunction with at least a container associated with said sheet, said container having a predetermined quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces thereto, said apparatus comprising a housing, a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, portions of said sheet being adapted to be advanced through said region from one side of said region to the opposite side thereof, said housing providing an opening through at least a wall thereof, guide means associated with said housing and aligned with said opening, a support for mounting said container, said support being movable through said opening

and into said housing, movement of said support within said housing being constrained by said guide means, means associated with said guide means for locating said support at a predetermined position so that a container mounted thereon is adjacent to said region on said one side thereof and is adjacent to at least one of said portions, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container mounted on said support in order to cause ejection of processing liquid onto said one portion, said second pressure-applying means being normally deactuated, and means for actuating said second pressure-applying means, advancement of said one portion through said region causing spreading of a layer of said processing liquid on said portion.

9. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a predetermined quantity of processing liquid therewithin which may be entirely dispensed therefrom upon application of compressional forces to said container, said apparatus comprising a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced through said region from one side of said region to the opposite side thereof, support means movable in a predetermined path for carrying said container from a first position remote from said region to a second position adjacent to said region on said one side thereof and adjacent to at least one of said portions, guide means associated with said housing for constraining said support means for movement in said predetermined path, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said second position in order to cause ejection of processing liquid therefrom onto said one portion, said second pressure-applying means being normally deactuated, and means responsive to the advancement of said associated portions through said region for actuating said second pressure-applying means, advancement of said associated portions through said region causing superposition thereof with a layer of processing liquid therebetween.

10. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a predetermined quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces to said container, said apparatus comprising a first pressure-applying means including a pair of rollers defining a region therebetween, associated portions of said sheets being adapted to be advanced between said rollers, advancement of said sheets between said rollers being accompanied by rotation of said rollers, means for locating said container at a predetermined position adjacent to said region and adjacent to at least one of said portions, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said predetermined position in order to cause ejection of processing liquid therefrom onto said one portion, said second pressure-applying means being normally deactuated, and means synchronized with said rotation of said rollers for actuating said second pressure-applying means, advancement of said associated portions between said rollers causing superposition of said portions with a layer of processing liquid therebetween.

11. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said photographic apparatus comprising a housing, a first pressure-applying means within said housing, said first pressure-applying means including a pair of rollers adapted to generate pressure in the region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced between said rollers in superposed relation, stop means operable to arrest advancement of said sheets between said rollers, said housing providing an opening through at least a wall thereof, guide means associated with said housing and aligned with said opening, a support for a container having a predetermined quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces to said container, said support being movable through said opening and into said housing, movement of said support within said housing being constrained by said guide means, means associated with said guide means for locating said support at a predetermined position so that a container mounted thereon is adjacent to said region and to at least one of said portions, movement of said support into said predetermined position rendering said stop means inoperable, a second pressure-applying means which, when actuated, is adapted to exert pressure on said container mounted on said support in order to cause ejection of processing liquid onto said one portion, said second pressure-applying means being normally deactuated, and means synchronized with the advancement of said sheets through said region causing superposition thereof with a layer of processing liquid therebetween.

12. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces to said container, said quantity being slightly in excess of the minimum required for spreading a layer of predetermined depth and extent between said sheets, said apparatus comprising a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced through said region from one side of said region to the opposite side thereof, support means movable in a predetermined path for carrying said container from a first position remote from said region to a second position adjacent to said region on said one side thereof and adjacent to at least one of said portions, guide means associated with said housing for constraining said support means for movement in said predetermined path, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said second position in order to cause ejection of processing liquid therefrom onto said one portion, said second pressure-applying means being normally deactuated, and a manually operable handle for actuating said second pressure-applying means, advancement of said associated portions through said region causing superposition thereof with a layer of processing liquid therebetween.

13. A photographic apparatus for processing a photosensitive sheet in conjunction with another sheet and in conjunction with at least a container associated with said sheets, said container having a quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces to said container, said quantity being slightly in excess of the minimum required for spreading a layer of predetermined depth and extent between said sheets, said apparatus comprising a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, associated portions of said sheets being adapted to be advanced through said region from one side of said region to the opposite side thereof, guide means associated with said housing, a support for said container engageable with said guide means, said guide means being adapted to locate said support at a predetermined position so that a container mounted thereon is adjacent to said region on said one side thereof and is adjacent to at least one of said portions, and a second pressure-applying means comprising a resilient pad movable with respect to said support and adapted to exert pressure on a container mounted on said support in order to cause ejection of processing liquid onto said one portion, advancement of said associated portions through said region causing superposition thereof with a layer of processing liquid therebetween.

14. A photographic apparatus for processing a photographic sheet in conjunction with a container having therewithin a quantity of processing liquid which may be dispensed therefrom upon application of compressional forces thereto, said apparatus comprising a first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, portions of said sheet being adapted to be advanced through said region from one side thereof to the opposite side thereof, support means movable in a predetermined path for carrying said container from a first position remote from said region to a second position adjacent to said region on said one side thereof and adjacent to at least one of said portions, guide means associated with said housing for constraining said support means for movement in said predetermined path, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said second position in order to cause ejection of processing liquid from said container onto said one of said portions, said second pressure-applying means being normally deactuated, and actuating means mechanically operatively connected to said second pressure-applying means.

15. A photographic apparatus for processing a photographic sheet in conjunction with a container having therewithin a quantity of processing liquid which may be dispensed therefrom upon application of compressional forces thereto, said quantity being slightly in excess of the minimum required for spreading a layer of predetermined depth and extent on said sheet, said apparatus comprising a first pair of pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, portions of said sheet being adapted to be advanced through said region from said one side thereof to the opposite side thereof, support means movable in a predetermined path for carrying said container from a first position remote from said region to a second position adjacent to said region on said one side thereof and adjacent to at least one of said portions, guide means associated with said housing for constraining said support means for movement in said predetermined path, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said second position in order to cause ejection of processing liquid from said container onto said one of said portions, said second pressure-applying means being normally deactuated, and actuating means mechanically operatively connected to said second pressure-applying means.

16. A photographic apparatus for processing a photographic sheet in conjunction with a container having a predetermined quantity of processing liquid therewithin and a sealed mouth through which said processing liquid may be dispensed upon application of compressional forces to said container, said apparatus comprising a housing, first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, portions of said sheet being adapted to be advanced from one side of said region to the opposite side thereof, support means for mounting said container, said support means being movable from a position at which said container may be mounted thereon to a predetermined position at which the mouth of a container mounted thereon is adjacent to said region on said one side thereof and adjacent to at least one of said portions, guide means associated with said housing for constraining said support means for movement into said predetermined position, second pressure-applying means comprising a member adapted to cooperate with said support means when said support means is in said predetermined position in order to cause ejection of processing liquid through said mouth onto said one of said portions, said second pressure-applying means being normally deactuated, and actuating means mechanically operatively connected to said second pressure-applying means, whereby advancement of said one of said portions through said region causes a layer of processing liquid to be spread on said one of said portions.

17. A photographic apparatus for processing a photosensitive sheet in conjunction with at least a container associated therewith, said container having a predetermined quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces thereto, said apparatus comprising a first pressure-applying means defining a pressure-applying region, means for metering advancement of successive portions of said sheet through said region, means for locating said container at a predetermined position adjacent to said region and adjacent to one of said portions, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said predetermined position in order to cause ejection of processing liquid from said container onto said one of said portions, said second pressure-applying means being normally deactuated, said means for metering advancement of successive portions of said sheet through said region being synchronized with said second pressure-applying means whereby advancement of said sheet through said region is accompanied by actuation of said second pressure-applying means, advancement of said one portion through said region

causing a layer of processing liquid to be spread upon said one portion.

18. A photographic apparatus for processing a photo-sensitive sheet in conjunction with at least a container associated therewith, said container having a predetermined quantity of processing liquid therewithin which may be dispensed therefrom upon application of compressional forces thereto, said apparatus comprising a first pressure-applying means including a pair of rollers, successive portions of said sheet being adapted to be advanced between said rollers, advancement of said sheet between said rollers being accompanied by rotation of said rollers, means for locating said container at a predetermined position adjacent to said region and adjacent to one of said portions, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said predetermined position in order to cause ejection of processing liquid therefrom onto said one portion, said second pressure-applying means being normally deactuated, and means synchronized with said rollers for actuating said second pressure-applying means, advancement of said one of said portions between said rollers causing a layer of processing liquid to be spread upon said one of said portions.

19. A photographic apparatus for processing a photosensitive sheet in conjunction with a container associated therewith, said container having a quantity of processing liquid therewithin which may be dispensed therefrom upon application thereto of compressional forces, said apparatus comprising a housing, a first pressure-applying means within said housing, said first pressure-applying means including a pair of members defining a region between the adjacent surfaces thereof, successive portions of said sheets being adapted to be advanced through said region from one side thereof to the opposite side thereof, means for locating said container at a predetermined position adjacent to said region on said one side thereof and adjacent to one of said portions, a second pressure-applying means which, when actuated, is adapted to exert pressure on a container located at said predetermined position in order to cause ejection of processing liquid therefrom onto said one portion, said second pressure applying means being normally deactuated, and a manually operable handle operatively connected to said second pressure-applying means and extending through said housing for actuating said second pressure-applying means, advancement of said one of said portions through said region causing a layer of processing liquid to be spread upon said one of said portions.

20. A photographic apparatus for processing a photosensitive sheet in conjunction with a container associated therewith, said container having a substantially flat face, having a predetermine quantity of processing liquid therewithin and having a liquid-dispensing mouth, said apparatus comprising a housing, a first pressure-applying means mounted within said housing and defining a pressure-applying region, successive portions of said sheet being adapted to be advanced through said pressure-applying region from one side thereof to the opposite side thereof, support means for locating said container at a predetermined position adjacent to said pressure-applying region on said one side thereof so that said mouth is adjacent to one of said portions, said support means being provided with a substatnially flat surface against which said face of said container abuts when said container is in said predetermined position, a member pivotally connected to said housing, and a second pressure-applying means operatively connected to said member, said second pressure-applying means, when actuated, being adapted to successively contact successive portions of said container and to successively compress said successive portions against said support means in order to cause ejection of said processing liquid from said container, through said mouth and onto said one of said portions.

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Number	Name	Date
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