

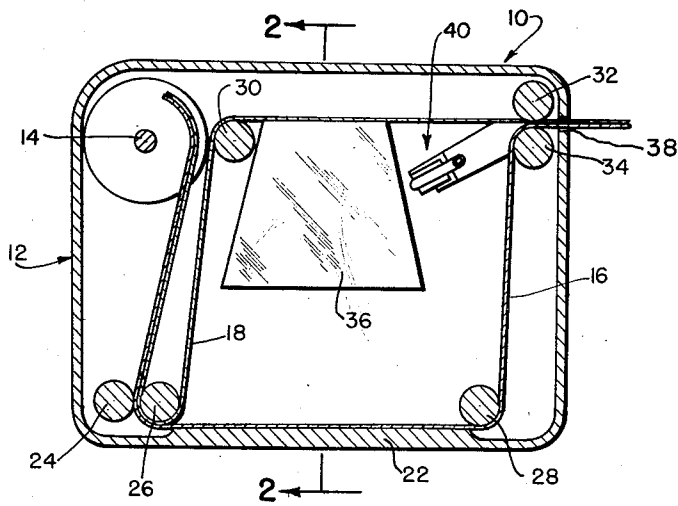
Feb. 11, 1964

H. E. ERIKSON
PHOTOGRAPHIC APPARATUS

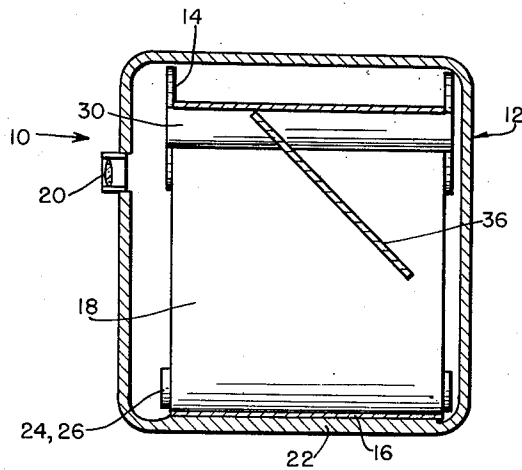
3,120,792

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3 Sheets-Sheet 1



F I G. 1



F I G. 2

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3 Sheets-Sheet 2

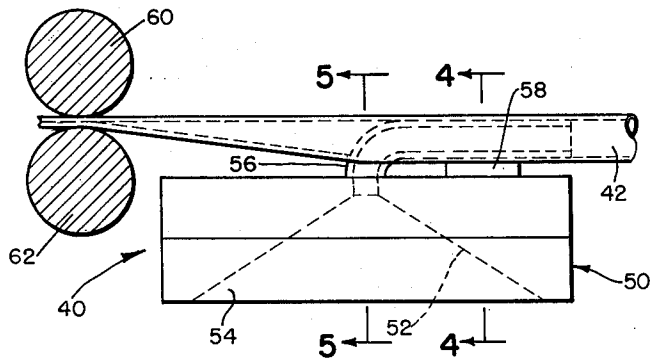


FIG. 3

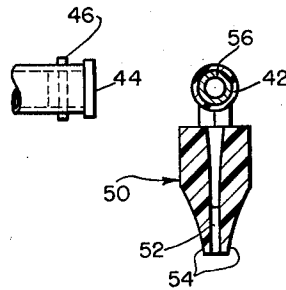


FIG. 4

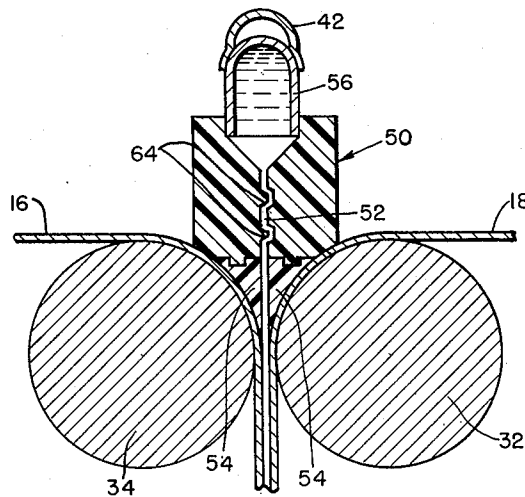


FIG. 5

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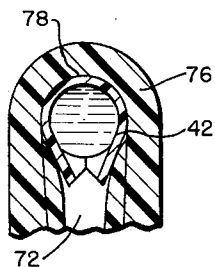
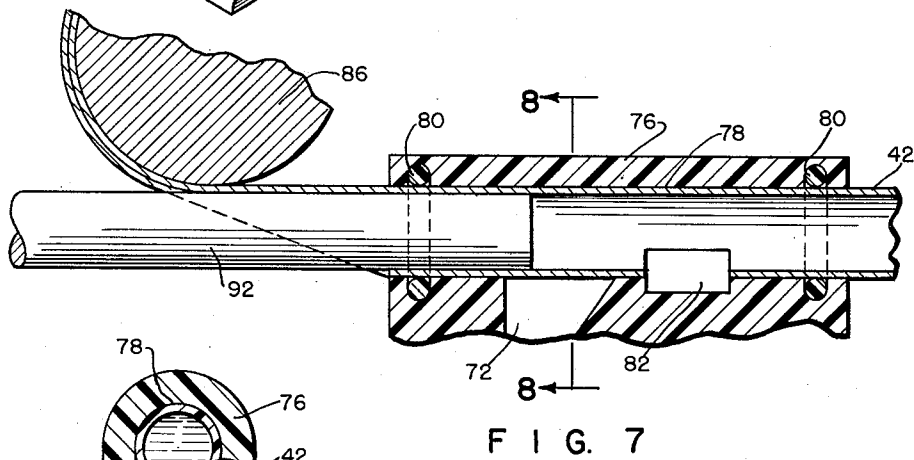
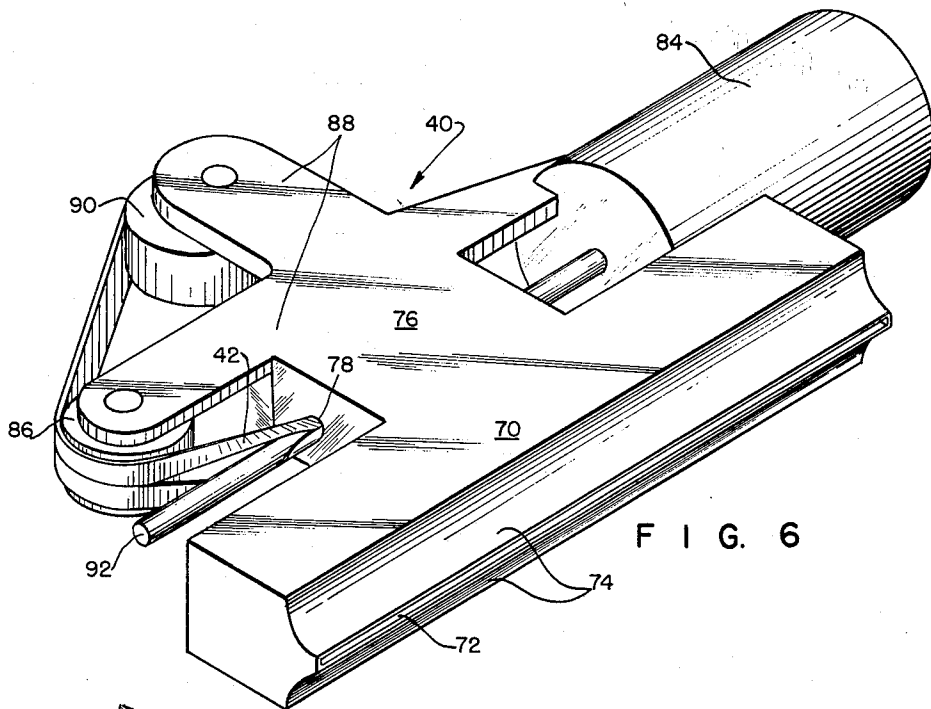
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3 Sheets-Sheet 3



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3,120,792

PHOTOGRAPHIC APPARATUS

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21 Claims. (Cl. 95—13)

This invention relates to photographic apparatus for exposing photosensitive sheet material and treating the exposed photosensitive sheet material with a fluid and, more particularly, to apparatus of the type wherein the exposed photosensitive sheet is superposed with a second sheet and the fluid is distributed between the superposed sheets.

The present invention may be incorporated in apparatus, such as a camera, which performs the functions of both photographically exposing and then processing the light-sensitive sheet material to produce visible photographic images; or the invention may be incorporated in apparatus for only treating light-sensitive materials which have been exposed by some other means. Processing of the photosensitive sheet is effected by superposing the photosensitive sheet with a second sheet and spreading a processing fluid which is preferably quite viscous in a thin layer between the superposed sheets. Superpositioning of the sheets and spreading of the fluid is accomplished by passing the sheets between a pair of pressure-applying members which guide the sheets along convergent paths into superposition with one another. The fluid is supplied to and preferably distributed within a space between the sheets formed by convergent portions thereof in the region where the sheets enter between the pressure-applying members during movement of the sheets relative to and between the pressure-applying members.

An object of the invention is to provide, in photographic apparatus of the type described, novel and improved means for supplying and dispensing a photographic processing fluid for distribution between a pair of superposed sheets.

Another object of the invention is to provide apparatus of the type described wherein the fluid is provided in an elongated tube and including means for opening the tube, means for ejecting the fluid contents of the tube therefrom and means for conducting the fluid at a predetermined rate to a space between the sheets for spreading therebetween.

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

FIGURE 1 is a sectional, plan view of photographic apparatus in the form of a camera embodying the invention;

FIG. 2 is a sectional view taken substantially along the line 2—2 of FIG. 1;

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FIG. 3 is a somewhat schematic plan view of apparatus embodying the invention;

FIGS. 4 and 5 are sectional views taken respectively along the lines 4—4 and 5—5 of FIG. 3;

FIG. 6 is a perspective view of another embodiment of apparatus incorporating the invention;

FIG. 7 is a fragmentary sectional view taken through the apparatus of FIG. 6; and

FIG. 8 is a sectional view taken substantially along the line 8—8 of FIG. 7.

The apparatus of the invention is illustrated in FIGS. 1 and 2 in the form of a camera for photographically exposing and thereafter processing an elongated photosensitive sheet by superposing the exposed photosensitive sheet with a second sheet, and spreading a fluid processing composition in a thin layer between the superposed sheets. By way of example, the photosensitive sheet comprises a layer of a photosensitive material, such as a gelatino silver halide emulsion in which a latent image can be produced by differentially exposing the emulsion to actinic light, carried on a suitable support or backing. The second sheet is preferably adapted to serve as a support for an image-receptive layer in which a visible positive print is formed from a latent image in the photosensitive layer. The processing composition, when spread in a thin layer between the photosensitive and second sheets, effectuates a silver halide diffusion-transfer reversal process by which a latent image in the photosensitive sheet is developed and a positive print is produced in the second sheet. A processing composition for this purpose contains an aqueous solution of a silver halide developer such as hydroquinone, a silver halide solvent such as sodium thiosulfate, and an alkali such as sodium hydroxide. In the processing of the photosensitive and second sheets, the sheets are maintained in superposition with the layer of processing composition interposed between them during a predetermined processing period during which exposed silver halide of the photosensitive strip is reduced to silver and unreduced silver halide forms a water-soluble complex which is diffused through the layer of fluid to an image-receiving layer where it is reduced to silver to form a visible print.

Examples of photographic materials useful in a process of the foregoing type are described in Patents No. 2,543,181, issued February 27, 1951, and 2,662,822, issued December 15, 1953, both in the name of Edwin H. Land. It is, of course, to be understood that the apparatus herein described is not limited to use with any particular species of photosensitive and second sheets, the terms "photosensitive" and "second" being used in their broadest sense to indicate a first sheet which is photosensitive and another sheet which merely may aid in the spreading of the processing composition over the surface of the photosensitive sheet and which may, if desired, possess other characteristics.

The camera shown in FIGS. 1 and 2 may be designed and employed to make a sequence of discrete exposures (and prints) either in rapid succession, as in the case of motion pictures, or at intervals of any duration; or it may be employed to make a continuous trace type of exposure. Accordingly, the apparatus is designed to supply and distribute the processing fluid both continuously and/or intermittently, depending on the frequency and type of exposure given the photosensitive material and whether or

not it is desired to process the photosensitive material immediately following exposure.

The basic components of the camera, designated 10, are a housing 12 in which is mounted a spool 14 holding a supply of a photosensitive sheet 16 and a second sheet 18. The photosensitive and second sheets are provided coiled in superposition with one another with the surfaces thereof located in the same relationship as during subsequent processing. The apparatus includes means for exposing the photosensitive sheet and means for locating the photosensitive sheet in proper position for exposure and, in the form shown, these means comprise, respectively, a lens 20 and a support plate 22 positioned for supporting the photosensitive sheet at the focal surface of the lens. In the case of a camera, a suitable shutter mechanism (not shown) may be provided in association with the lens. A pair of guide rolls 24 and 26 are provided located in juxtaposition adjacent an edge of support plate 22. A third guide roll 28 is provided adjacent the opposite edge of support plate 22 from guide roll 26 and the photosensitive and second sheets extend from spool 14 between guide rolls 24 and 26 where the photosensitive and second sheets are separated from one another and the photosensitive sheet extends across support plate 22 between the latter and guide roll 28 in position for exposure. A fourth guide roll 30 is provided located adjacent spool 14 and toward the opposite side of housing 12 from guide roll 26. Second sheet 18 extends from guide roll 26 where the second sheet is superposed with the photosensitive sheet toward and around guide roll 30, the latter cooperating with guide rolls 26 and 28 to effect the separation of the photosensitive and second sheets to permit exposure of the former.

The means for superposing the photosensitive and second sheets, following exposure of the photosensitive sheet, and distributing a processing fluid between the sheets comprise a pair of pressure-applying members in the form of juxtaposed rolls 32 and 34, mounted within the housing at a location diagonally opposite guide rolls 24 and 26. Photosensitive and second sheets 16 and 18 extend, respectively, from guide rolls 28 and 30 into superposition between pressure-applying rolls 32 and 34. The paths of the two sheets diverge sharply (by approximately 90°) at guide roll 26 and converge at approximately the same angle at the pressure-applying rolls where the sheets are again superposed. Movement of the sheets through the apparatus is preferably effected by rotation of pressure-applying rolls 32 and 34 or by tension applied to the sheets exterior of the housing. It is desirable to maintain tension on the portions of the two sheets extending between guide rolls 24 and 26 and pressure-applying rolls 32 and 34, particularly to insure retention of the photosensitive sheet in the focal plane against support plate 22. For this purpose, either or both of rolls 24 and 26 are provided with a friction drag or brake tending to retard their rotation in response to movement of the photosensitive and second sheets therebetween.

In order to achieve a compact structure, in the form of camera shown, a mirror 36 is provided for bending, at right angles, the optical path of light between lens 20 and the focal surface of the lens located at support plate 22. Accordingly, the optic axis of lens 20 lies in a plane parallel to the focal surface of the lens, and mirror 36 is mounted within the camera so that its plane reflecting surface is located at 45° with respect to the focal surface and optical axis of the lens, and the mirror, in this position, is surrounded on four sides by the photosensitive and second sheets.

Camera 10 includes a fluid supply and feeding device, designated 40, for holding a quantity of processing fluid and for feeding the fluid at a predetermined rate to a space between the photosensitive and second sheets at which the sheets converge and enter between pressure-applying rolls 32 and 34. As the sheets with the fluid therebetween are moved between the pressure-applying

rolls, the latter cause the fluid to be distributed in a thin layer of uniform predetermined depth between the sheets to form a sandwich in which processing of the photosensitive sheet occurs. This sandwich, in the form shown, is advanced immediately as it is formed from between the pressure-applying rolls and from the camera housing through an opening 38 provided therein for this purpose. The fluid spread between the sheets also functions to adhere the two sheets to one another and, in order to allow for processing of the sheets in the presence of light, both the photosensitive and second sheets are opaque to actinic light or are provided with outer layers which prevent actinic light from reaching the photosensitive layer of the photosensitive sheet. These sheets, being light opaque, offer the further advantage of a lighttight assembly when coiled on spool 14 so that the spool may be handled in the light without exposing the photosensitive sheet coiled thereon. The fact that the photosensitive and second sheets can be processed in the light offers several advantages including, for example, a camera structure which can be operated manually merely by pulling on a portion of the superposed photosensitive and second sheets projecting through opening 38 from the camera. Moreover, when the processing of a particular area of the photosensitive sheet is complete, this area may be immediately separated from the area of the second sheet superposed therewith and/or the portions of the two sheets comprising the superposed areas may be separated from other portions of the two sheets.

Reference is now made to FIGS. 3 through 5 of the drawings wherein there is illustrated a fluid supply and feeding device 40 incorporating the invention. The processing fluid is supplied in a thin-walled, elongated, flexible tube 42, the tube preferably being of sufficient length and diameter to contain processing fluid in an amount sufficient to effect the treatment of the photosensitive sheet supplied on spool 14. Materials suitable for tube 42 include rubber and the organic plastics, particularly those which can be formed by extrusion processes. The cross-sectional profile of tube 42 may be of any convenient shape, circular being preferable, and is uniform throughout the length of the tube so that the quantity of fluid contained in any particular section of the tube is equal to the quantity of fluid contained in any other section of the tube of equal length. A closure in the form of a plug 44 and a compression ring 46 is provided at the trailing end of the tube. However, any form of closure capable of withstanding the pressures generated within the fluid is acceptable; and such closures include pinching the tube at its trailing end and sealing portions of the inner wall to one another to retain the pinched end in a closed condition.

The fluid contents of the tube are distributed for spreading between the sheets by a nozzle 50 comprising a body having a divergent passage 52 opening at lips 54 which are shaped to fit against the sheets as they enter between the pressure-applying rolls at the bite of the rolls. The width of passage 52 at lips 54 is preferably equal to the width of the area of the photosensitive sheet in contact with which the fluid is to be distributed by the pressure-applying rolls. Connected to passage 52 within nozzle 50 is a tubular conduit 56 having at least a straight portion located within fluid-containing tube 42. Conduit 56 has an external cross-sectional profile corresponding to the internal profile of the tube. In the form shown, the profiles of the conduit and tube are circular, and the tube has an external diameter which is at least equal to the internal diameter of the fluid-containing tube. The conduit is open at its end so that movement of the fluid-containing tube with respect to and along the outside of conduit 56 will cause the fluid contents of the fluid-containing tube to be conducted therefrom through conduit 56 to the passage 52 of nozzle 50.

The fluid supply and feeding device includes a cutting member 58 which extends from outside of tube 42 into

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the tube into engagement with a portion of conduit 56 located within tube 42. Member 58 comprises a thin blade extending axially with respect to tube 42 and conduit 56 and having a sharpened edge against which tube 42 is moved for slitting the tube to allow the latter to be moved with respect to and in surrounding relation to conduit 56. The conduit is curved so as to project from the tube through the slit and is connected to the nozzle.

The fluid supply and feeding device also includes a pair of drive rollers 60 and 62 for drawing tube 42 against cutting member 58 and conduit 56 so as to slit the tube and cause its fluid contents to be ejected therefrom through conduit 56. The tube extends from the conduit between drive rollers 60 and 62 which engage the slit and emptied tube and rotate for moving the tube with respect to the cutting member and fluid conduit. The tube, following slitting, is compressed between drive rollers 60 and 62 so that very little space is occupied by the emptied tubing and it can be easily stored on a take-up spool (not shown) provided for this purpose.

The rate of feeding of the fluid to the photosensitive and second sheets is primarily a function of the diameter of tube 42 and the linear rate of movement of the tube with respect to conduit 56. An advantage of this structure over other forms of fluid containing and feeding devices, resides in the fact that pressure built up within conduit 56 and tube 42 at the open end of the conduit is not transmitted, to any great extent, to the remainder of the fluid in the tube and, as a result, the rate of feeding of the fluid is not dependent on the generation and transmission of hydraulic pressure within a large quantity of the fluid. Moreover, the fluid, which is quite viscous, is required to flow through a relatively short distance so that pressure losses are reduced to a minimum, and the pressure of the fluid and, hence, its rate of flow, can be controlled more accurately. The rate of feeding of the fluid to the superposed sheets is adjusted so that the amount of fluid fed is just sufficient to provide a layer of the desired thickness and area between the superposed sheets. Accordingly, the diameter of the tube, the linear rate of movement of the tube and the linear rate of movement of the sheets are all correlated so that the apparatus can be provided a single drive mechanism coupled with the pressure-applying rolls and the tube drive rollers for simultaneously rotating both sets of rollers at speeds bearing a fixed relationship.

Pressure-applying rolls 32 and 34 are positioned in juxtaposition with their axes substantially parallel and located in a plane. The pressure-applying rolls may be compliantly mounted for movement within the plane toward and away from one another, in which case, they are biased toward one another, or the pressure-applying rolls may be fixedly mounted with respect to one another so as to provide a gap of predetermined uniform depth between their adjacent surfaces. In the first-mentioned arrangement, the thickness of the layer of fluid distributed between the superposed sheets by the rollers is, in part, a function of the pressure with which the rolls are biased toward one another. In the latter arrangement, the thickness of the layer of fluid is a function of the depth of the gap between the rolls and the thickness of the two sheets. In both instances, the thickness of the layer of fluid is also a function of the viscosity and, hence, temperature of the fluid so that the fluid spreading components of the apparatus, i.e., the pressure-applying rolls, can be compensated for temperature by the provision of means responsive to changes in temperature for varying either the pressure applied by the rolls or the depth of the gap therebetween. At least one of the rolls is preferably provided with shoulders at its ends for engaging and compressing the marginal portions of the superposed sheets so as to prevent the fluid from being spread from between the lateral margins of the sheets and thereby confining the fluid to a layer between the sheets.

As previously noted, the mouth of passage 52 of nozzle

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50 is substantially equal in width to the area of the sheets between which the fluid is to be spread, and the passage itself is constructed so as to promote the uniform distribution of the fluid within the passage at the mouth thereof.

For this purpose, passage 52 is provided, in the form shown in FIG. 5, with ridges 64 extending transversely of the direction of flow of the fluid through the passage for inhibiting the flow of fluid so as to cause the outward or divergent distribution of the fluid from the point at which the fluid enters passage 52 from conduit 56.

The sheets may be advanced at a slow rate or intermittently between the pressure-applying members in engagement with lips 54 of nozzle 50. In instances where the sheets are moved at a slow rate, it is desirable that the fluid be prevented from contacting at least the photosensitive sheet until the sheets are properly superposed so that processing and image formation does not begin to occur until the inner surfaces of the sheets are in the desired superposed relationship. In the form shown in FIG. 5, lips 54, in addition to being shaped to conform to the curvature of the sheets as they enter between the bite of the pressure-applying rolls, are formed of a very flexible material and taper to a thin edge. Materials suitable for the fabrication of lips 54 include rubber, and particularly silicon rubbers, inasmuch as adherence of the fluid to the lips should be prevented. The provision of thin flexible lips for the nozzle offers a further advantage when the apparatus is to be employed intermittently. When feeding of the fluid is discontinued, the fluid located between the lips tends to adhere the lips to one another providing a seal for passage 52, which seal is easily ruptured when feeding of the fluid is recommenced.

Another form of fluid supply and feeding device 40 is illustrated in FIGS. 6 through 8 of the drawings. This device comprises not only a nozzle and means for opening the tube and conducting its fluid contents to the nozzle, but means for holding a supply of the fluid filled tube, means for moving the fluid filled tube so as to eject its fluid contents, and means for storing the tube following ejection of its fluid contents. The device comprises a nozzle 70 having a passage 72 and lips 74 at the exit end of the passage. Coupled with nozzle 70 is a block 76 having a bore 78 therethrough shaped to conform to the outside of fluid filled tube 42. In the form shown, both the bore and the tube are cylindrical, the former having an internal diameter substantially equal to the external diameter of the tube. A pair of resilient O-rings 80 are provided in bore 78 adjacent its ends for engaging tube 42 and providing a seal between the bore and the tube. Mounted within bore 78 is a slitting member 82 against which tube 42 can be moved through the bore for slitting the tube longitudinally. A container 84 for a supply of fluid filled tube 42 is coupled with block 76 and nozzle 70 adjacent one end of bore 78 and a guide roll 86 is provided mounted on a support member 88 comprising block 76 and nozzle 70 in alignment with the opposite end of bore 78 for guiding the tube from container 84 through the bore and around roll 86 to take-up spool 90 mounted on support member 88.

Bore 78 is coupled with passage 72 of nozzle 70 so that the fluid contents of tube 42 may be ejected from the tube directly into passage 72. As a means for ejecting the fluid contents of the tube through the slit therein into passage 72, there is provided a rod 92 which extends into tube 42 at the exit end of bore 78 to a position adjacent passage 72. Rod 92 has an outside diameter at least equal to the inside diameter of the tube so that the rod functions as a piston within the tube for causing the ejection of the fluid contents of the tube therefrom into passage 72. Rod 92 is preferably mounted for axial movement within the tube between an open position, shown in FIG. 7, wherein the end of the rod within the tube is located adjacent one side of the passage so that the passage is open to the tube to allow the fluid contents of the tube to be ejected into the pas-

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sage, and a closed position wherein the rod extends within the tube across the opening between bore 78 and passage 72. In this closed position of the rod, fluid is prevented from being fed from the tube into passage 72 through the passage to the sheets so that the rod not only functions to cause ejection of the fluid from the tube, but also acts as a valve between the fluid filled container and the nozzle, which valve can be closed when no fluid is desired or required.

In the form of fluid feeding device shown, for example, in FIG. 6 of the drawings, means other than rod 92 may be provided for causing the ejection of the fluid contents of the tube through the slit therein into passage 72. Such means may include, for example, a constriction in bore 78 or a pair of pressure-applying members for engaging the tube and compressing the latter so as to eject the fluid contents of the tube therefrom.

Both forms of fluid supply and feeding devices are initially provided with the tube disposed in the positions shown in the drawings, that is, with a portion of the tube slit and located, as the case may be, around conduit 56 or within bore 78 around rod 92. In the form of device shown in FIG. 6, the tube extends from the bore around guide roll 85 to take-up spool 90 and means are provided in the apparatus for cooperating with the take-up spool for rotating the latter to advance the tube from container 84 through bore 78 and block 76 around rod 92 to guide roll 85 and from there on to the take-up spool. The slit tube is flattened at the take-up spool so that it occupies very little space on take-up spool 90, and the drive mechanism of the apparatus may be provided with a roll which cooperates with roll 86 for compressing the tube and aiding in the advancement of the tube. The fluid supply and feeding device is designed and may be constructed of materials which render it expendable, that is, the device may be loaded into the apparatus to effect the processing of a length of photosensitive sheet and, when the fluid contents of the tube have been expended, the entire device including the collapsed tube may be discarded.

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. Photographic apparatus for exposing, and thereafter treating with a fluid, photosensitive sheet material, said apparatus comprising, in combination, means for photographically exposing a photosensitive sheet, means for conducting said photosensitive sheet through an exposure position wherein said photosensitive sheet is photographically exposed by said first-mentioned means into superposition with a second sheet, means for superposing said photosensitive and second sheets and distributing a fluid in a layer between said superposed sheets, a nozzle for conducting said fluid to a space between said sheets adjacent the last-mentioned means, opening means, means for moving an elongated tube containing said fluid lengthwise relative to said opening means to form a lengthwise opening in said tube, means for so engaging said tube during movement thereof with respect to said opening means as to cause the ejection of said fluid from said tube through said opening, and means for conducting said fluid from said tube through said opening to said nozzle.

2. The photographic apparatus of claim 1 wherein the last-mentioned means for conducting said fluid from said tube to said nozzle comprises a substantially rigid tubular conduit having an external, cross-sectional profile corresponding to the profile of the inner surface of said tube, said conduit extending from said nozzle through said opening into said tube adjacent one side of said opening means and including an open end section extending

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within said tube in a direction opposite the direction of movement of said tube to the opposite side of said opening means.

3. The photographic apparatus of claim 1 wherein said means for engaging said tube for causing the ejection of said fluid from said tube through said opening comprise means for applying compressive pressure to said tube.

4. Photographic apparatus for exposing, and thereafter treating with a fluid, photosensitive sheet material, said apparatus comprising, in combination, means for photographically exposing a photosensitive sheet, means for conducting said photosensitive sheet through an exposure position wherein said photosensitive sheet is photographically exposed by said first-mentioned means into superposition with a second sheet, means for superposing said photosensitive and second sheets and distributing a fluid in a layer between said superposed sheets, a nozzle for conducting said fluid to a space between said sheets adjacent the last-mentioned means, means disposed in surrounding relation to a portion of an elongated tube containing said fluid and providing a passage through which said tube is movable, cutting means mounted within said passage, means for moving said tube through said passage against said cutting means to form a lengthwise opening in said portion of said tube located within said passage, means providing a conduit connecting said nozzle with said passage adjacent said cutting means, and a closure member mounted in closing relation within said portion of said tube within said passage and located to the opposite side of said conduit from said cutting means for causing the ejection of the fluid contents of said tube through said opening into said conduit.

5. The photographic apparatus of claim 4 wherein said closure member is movable within said tube from said location to the opposite side of said conduit from said cutting means to a location on the same side of said conduit as said cutting means for closing said conduit and preventing the flow of said fluid from said tube through said conduit to said nozzle.

6. Photographic apparatus for exposing, and thereafter treating with a fluid, photosensitive sheet material, said apparatus comprising, in combination, means for photographically exposing a photosensitive sheet, means for conducting said photosensitive sheet through an exposure position wherein said photosensitive sheet is photographically exposed by said first-mentioned means, and conducting said photosensitive sheet and a second sheet along convergent paths into superposition with one another, a pair of juxtaposed pressure-applying members for engaging therebetween said photosensitive and second sheets to superpose said sheets and distribute a fluid in a thin layer between said superposed sheets, a nozzle for conducting said fluid to a space between said sheets where said sheets converge upon entering between said pressure-applying members, a cutting member, means for moving an elongated tube containing said fluid lengthwise relative to and against said cutting member to slit said tube lengthwise during movement of said sheets between said pressure-applying members, means for so engaging said tube during movement thereof with respect to said cutting member as to cause the ejection of said fluid from said tube through the slit therein, and means for conducting said fluid from said tube through said slit to said nozzle.

7. The photographic apparatus of claim 6 wherein said means for engaging said tube to cause the ejection of said fluid from said tube through said slit comprises a closure member mounted in closing relation within a slit portion of said tube and held substantially stationary with respect to said cutting member.

8. The photographic apparatus of claim 6 wherein the last-mentioned means for conducting said fluid from said tube to said nozzle comprises a substantially rigid tubular conduit having an external cross-sectional profile corresponding to the profile of the inner surface of said tube,

said conduit extending from said nozzle through said slit into said tube adjacent one side of said cutting member and including an open end section extending within said tube in a direction opposite the direction of movement of said tube to the opposite side of said cutting member.

9. The photographic apparatus of claim 6 wherein said means for engaging said tube to cause the ejection of said fluid from said tube through said slit comprises means for applying compressive pressure to a slit portion of said tube.

10. Photographic apparatus for treating a photographically exposed light-sensitive sheet with a fluid composition, said apparatus comprising, in combination, means for guiding said light-sensitive sheet and a second sheet into superposition and distributing a fluid in a layer between the superposed sheets, a nozzle for conducting said fluid to a space between said sheets adjacent the first-mentioned means, cutting means, means for moving an elongated tube containing said fluid lengthwise relative to and against said cutting means for opening said tube, means for so engaging said tube during movement thereof with respect to said cutting means as to cause the ejection of said fluid from said tube through the opening therein formed by said cutting means, and means for conducting said fluid from said tube through said opening to said nozzle.

11. The photographic apparatus of claim 10 wherein the last-mentioned means for conducting said fluid from said tube to said nozzle comprises a substantially rigid tubular conduit having an outside profile conforming substantially to the profile of the inner surface of said tube, said conduit being connected to said nozzle, extending through said opening into said tube adjacent one side of said cutting means and including an open end section extending within said tube in a direction opposite the direction of movement of said tube to a location at the opposite side of said cutting means.

12. The photographic apparatus of claim 10 wherein said means for engaging said tube for causing the ejection of said fluid from said tube through said opening comprises means for applying compressive pressure to said tube.

13. Photographic apparatus for treating a photographically exposed photosensitive sheet with a fluid composition, said apparatus comprising, in combination, means for guiding said photosensitive sheet into superposition with a second sheet, means for superposing said photosensitive and second sheets and distributing a fluid in a layer between said superposed sheets, a nozzle for conducting said fluid to a space between said sheets adjacent the last-mentioned means, means disposed in surrounding relation to a portion of an elongated tube containing said fluid and providing a passage through which said tube is movable, cutting means mounted within said passage, means for moving said tube through said passage against said cutting means to form a lengthwise opening in said portion of said tube located within said passage, means providing a conduit connecting said nozzle with said passage adjacent said cutting means, and a closure member mounted in closing relation within said portion of said tube within said passage and located to the opposite side of said conduit from said cutting means for causing the fluid contents of said tube to be ejected therefrom through said opening into said conduit.

14. The photographic apparatus of claim 13 wherein said closure member is movable within said tube from said location to the opposite side of said conduit from said cutting means to a location to the same side of said conduit as said cutting means for closing said conduit and preventing the flow of fluid from said tube through said conduit to said nozzle.

15. Photographic apparatus for treating a photographically exposed photosensitive sheet with a fluid composition, said apparatus comprising, in combination, means

for conducting said photosensitive sheet and a second sheet along convergent paths into superposition with one another, a pair of juxtaposed pressure-applying members for engaging therebetween said photosensitive and second sheets to superpose said sheets and distribute a fluid in a thin layer between said superposed sheets, a nozzle for conducting said fluid to a space between said sheets where said sheets converge upon entering between said pressure-applying members, a cutting member, means for moving an elongated tube containing said fluid lengthwise relative to and against said cutting member to slit said tube lengthwise during movement of said sheets between said pressure-applying members, means for so engaging said tube during movement thereof with respect to said cutting member as to cause the ejection of said fluid from said tube through the slit therein, and means for conducting said fluid from said tube through said slit to said nozzle.

16. The photographic apparatus of claim 15 wherein said means for engaging said tube to cause the ejection of said fluid from said tube through said slit comprises a closure member mounted in closing relation within a slit portion of said tube and held substantially stationary with respect to said cutting member.

17. The photographic apparatus of claim 15 wherein the last-mentioned means for conducting said fluid from said tube to said nozzle comprises a substantially rigid tubular conduit having an external cross-sectional profile corresponding to the profile of the inner surface of said tube, said conduit extending from said nozzle through said slit into said tube adjacent one side of said cutting member and including an open end section extending within said tube in a direction opposite the direction of movement of said tube to the opposite side of said cutting member.

18. The photographic apparatus of claim 15 wherein said means for engaging said tube to cause the ejection of said fluid from said tube through said slit comprises means for applying compressive pressure to a slit portion of said tube.

19. In photographic apparatus for treating a photographically exposed light-sensitive sheet with a fluid composition and including a pair of juxtaposed members for guiding said light-sensitive sheet into superposition with a second sheet and distributing said fluid in a layer between the superposed sheets, in combination, a nozzle for conducting said fluid to a space between said sheets adjacent said juxtaposed members, cutting means, means for moving an elongated tube containing said fluid lengthwise relative to and against said cutting means for opening said tube, means for so engaging said tube during movement thereof with respect to said cutting means as to cause the ejection of said fluid from said tube through the opening therein formed by said cutting means, and means for conducting said fluid from said tube through said opening to said nozzle.

20. In photographic apparatus of the type wherein a first sheet of photosensitive material is exposed and thereafter processed in conjunction with a second sheet by a layer of fluid processing composition distributed between said sheets, in combination, means for guiding said first and second sheets into superposition and distributing a fluid in a layer between the superposed sheets, a nozzle for conducting said fluid to a space between said sheets adjacent the first-mentioned means, cutting means, means for moving an elongated tube containing said fluid lengthwise relative to and against said cutting means for opening said tube, means for so engaging said tube during movement thereof with respect to said cutting means as to cause the ejection of said fluid from said tube through the opening therein formed by said cutting means, and means for conducting said fluid from said tube through said opening to said nozzle.

21. A photographic device for supplying and dispensing a photographic processing fluid at a measured rate for distribution between a pair of superposed photographic

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sheets to effect the treatment of said sheets, said device comprising, in combination, a flexible elongated tube of substantially uniform internal diameter containing said fluid, cutting means, means for supporting and guiding a section of said tube in engagement with said cutting means during lengthwise movement of said tube to form a lengthwise opening in said tube, means for so engaging said tube, during movement of said tube relative to and in engagement with said cutting means and the last-mentioned means, as to force said fluid from said tube through

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said opening, and means including a nozzle for conducting fluid from said tube through said opening therein to a space between said photographic sheets.

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