

# United States Patent

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## [54] SYSTEM FOR PROCESSING PHOTOGRAPHIC MATERIAL

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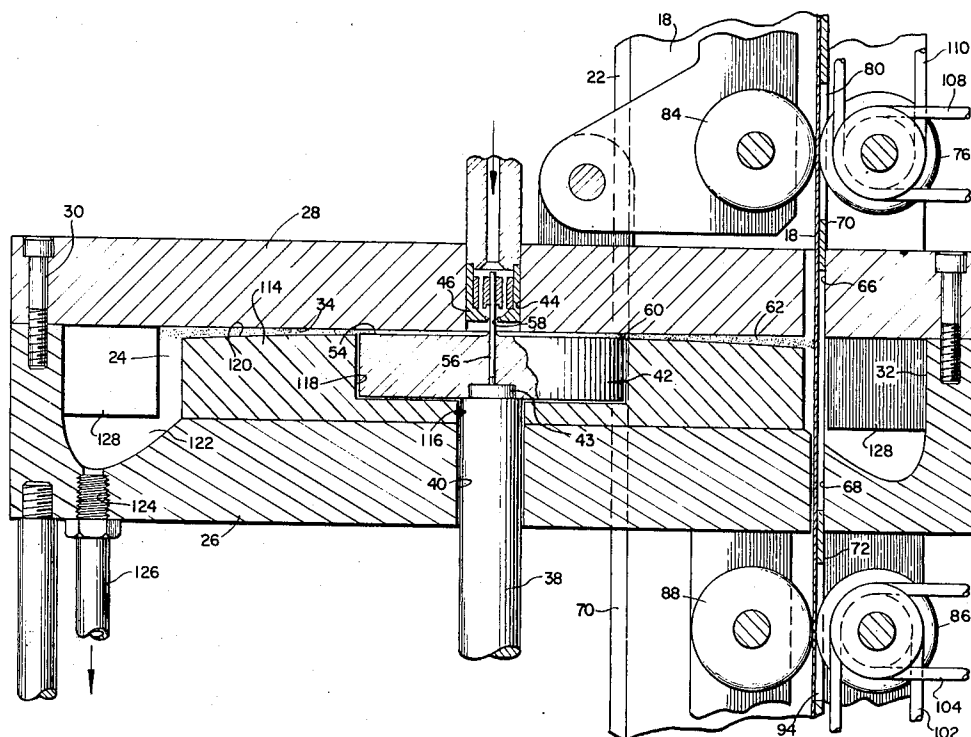
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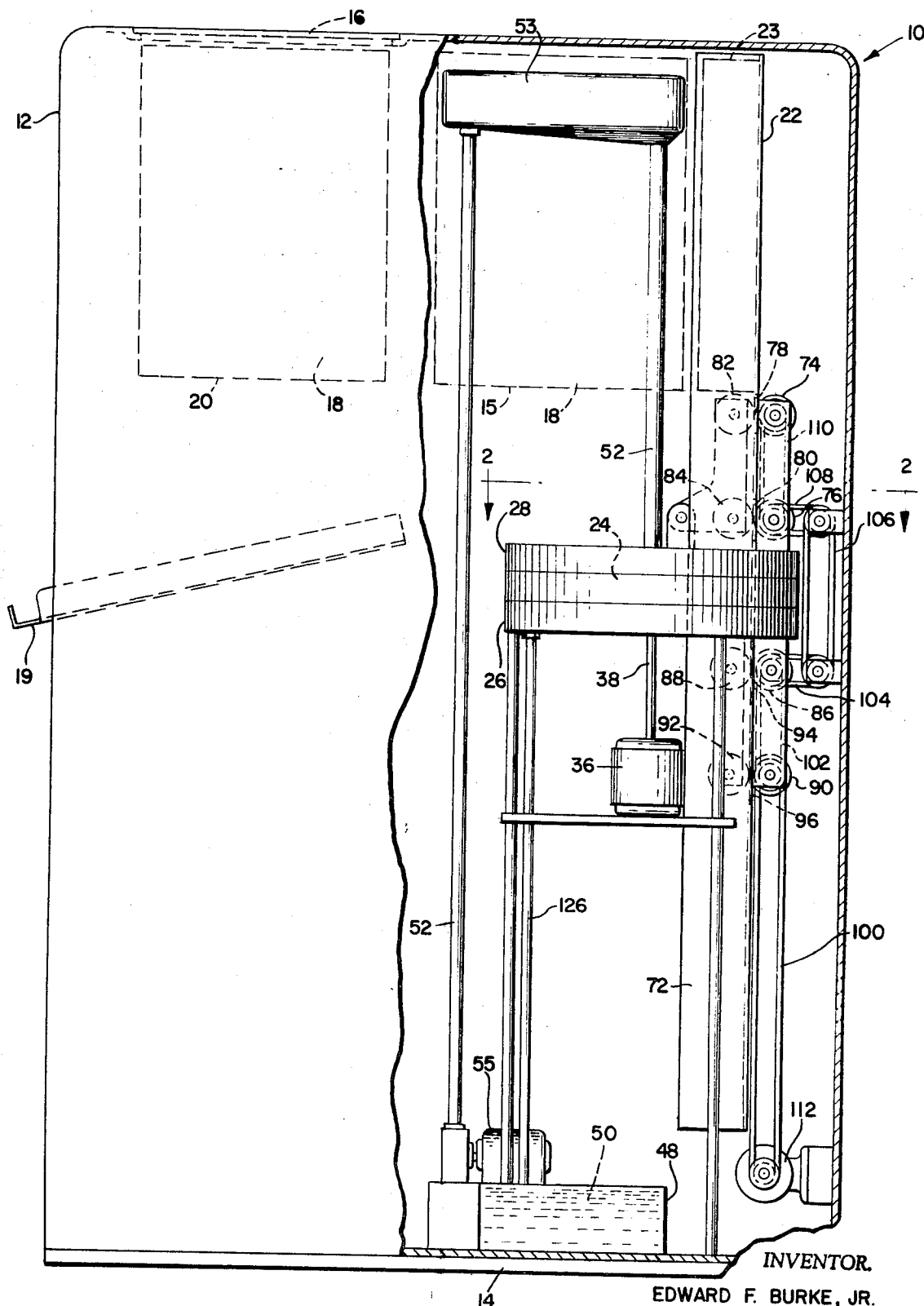
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### [57] ABSTRACT

A disc is mounted for rotation within a processing chamber which terminates in a toroidal fluid collecting chamber. Processing fluid is fed onto the spinning disc from which it is discharged radially in an atomized spray. A sheet of exposed photographic material is advanced through the processing chamber and the fluid spray generated therein while being disposed concentrically of the rotating disc. Air movement within the processing chamber is suppressed by a pair of members extending radially from the disc in closely spaced relationship on respective sides of the fluid spray and by baffle plates positioned around the fluid collecting chamber. Two pairs of cooperating rollers positioned on each side of the processing chamber serve to advance the sheet of material through that chamber while maintaining its proper alignment.

24 Claims, 4 Drawing Figures

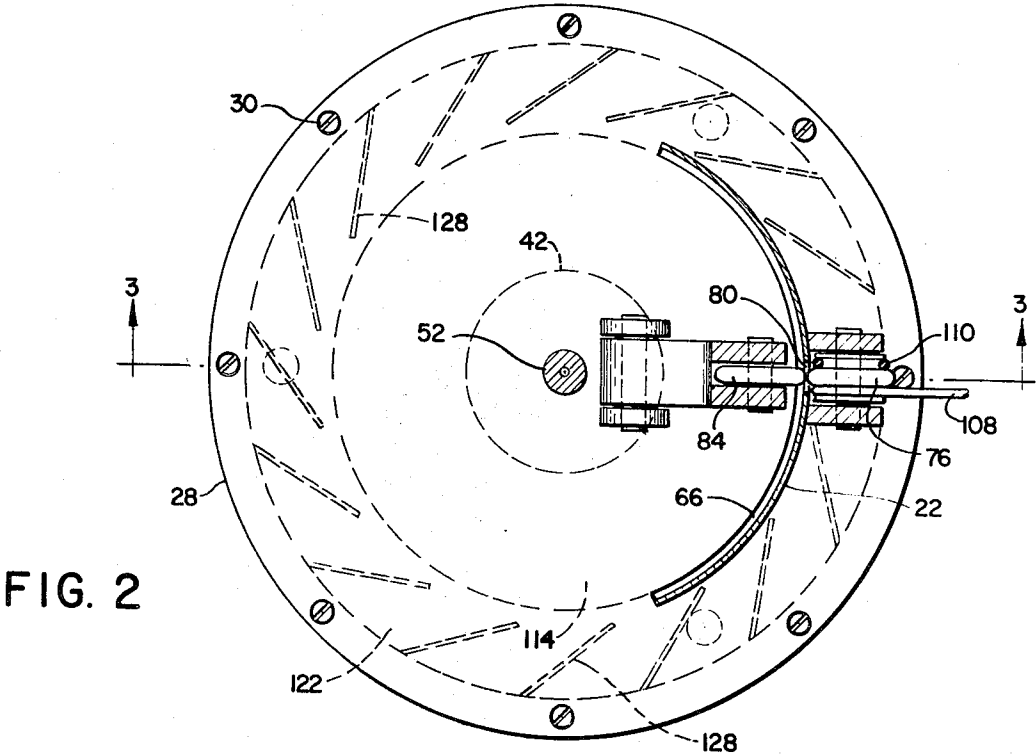
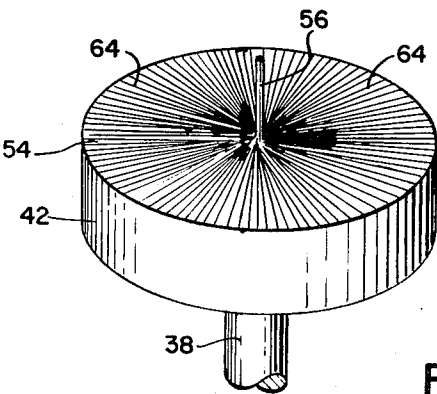




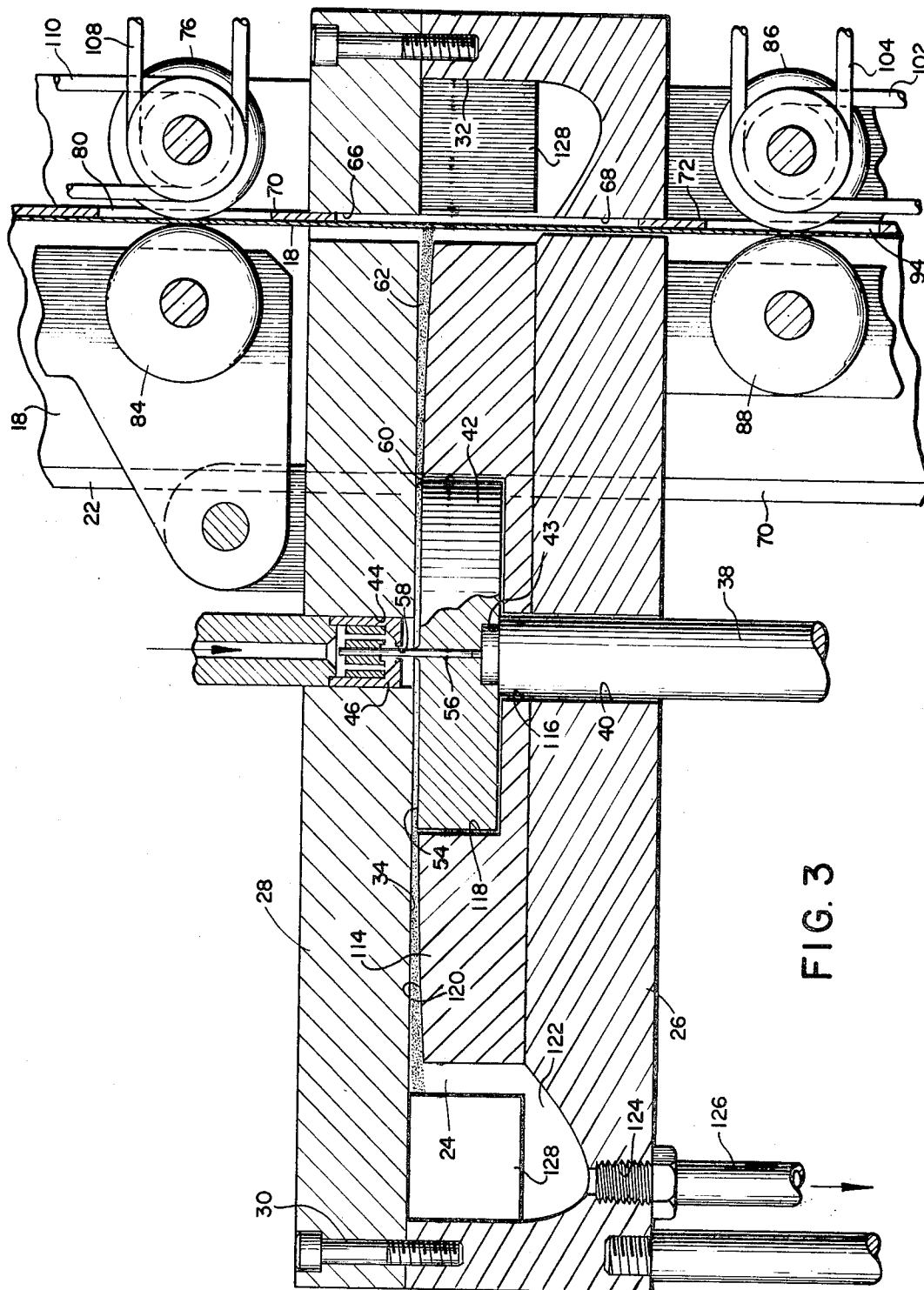
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# SYSTEM FOR PROCESSING PHOTOGRAPHIC MATERIAL

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

This invention relates to photography, and more particularly, to an improved system for treating exposed photographic material with a processing fluid.

### 2. Description of the Prior Art

In photographic processing operations, a requirement generally exists for treating the exposed photosensitive sheet material with one or more appropriate processing fluids to produce an image suitable for viewing. The quality of the viewable image is dependent upon the uniformity with which the processing fluid is applied to the exposed sheet material. This requirement, i.e., the application of a uniform or precision coating of fluid to the sheet material is particularly important in diffusion-transfer photographic processes.

One significant application of the present invention is in document copier apparatus wherein the copies are produced by a diffusion-transfer photographic technique. In such operations, after the photosensitive element has been exposed to record a latent image of the subject, a processing fluid is applied to that element in any one of a variety of ways. Typically, the processing fluid is applied by an applicator. One such arrangement which has gained favor employs a roller having a first portion thereof immersed in a pool or reservoir of the processing fluid, while another portion thereof is disposed in contact with the photographic sheet comprising the photosensitive component in which the latent image is recorded. As the photographic sheet is transported across the roller, that device rotates to draw fluid from the aforementioned pool and to apply such fluid to the sheet. In this connection, a meniscus of the fluid is first formed and then continually maintained between the roller and the photographic sheet.

While several such applicator systems have proved generally satisfactory in operation, it has been determined that they possess certain inherent characteristics which limit the quality of the finished product that can be produced by copier apparatus in which they are employed. One grouping of such limitations is associated with system contamination, while another grouping thereof is associated with the uniformity with which the fluid is applied to the surface of the photographic sheet. The limitations of both such groupings may be considered to result from the fact that there is a direct coupling between the applicator and the sheet of material to which the fluid is being applied.

More specifically, in these prior art systems, contamination on the surface of the sheet material may be transferred to the applicator and back into the fluid reservoir itself. Compounding this problem is the fact that these systems are not by their nature "self-cleaning". The possible undesirable consequences of arrangements of this type are self-evident.

It will also be recognized that in these prior art systems, the amounts of fluid applied to discrete areas of the photographic sheet are a direct function of individual characteristics of each such discrete area. Thus, it will be appreciated that the amount of fluid applied to each such area is dependent upon, for instance, the absorptivity characteristic of that area, the wettability of that area and the degree to which that area is contaminated with foreign matter. Further, in this same respect, since system operations are intermittent by nature, prior art applicator systems of this general type tend to produce both a lean leading edge and a rich trailing edge of processing fluid on the photographic sheet material.

An important object of this invention, therefore, is to provide an improved system for treating a sheet of photographic material with a processing fluid.

Another primary object of this invention is to provide an improved system for applying a precision coating of processing fluid to a sheet of photographic material.

An additional object of this invention is to provide an improved system for treating a sheet of photographic material

with a processing fluid and in which there is no direct coupling between the sheet of photographic material and the means for directing the fluid thereonto.

Still another object of this invention is to provide an improved system for treating a sheet of photographic material with processing fluid generated as a spray from a spinning disc.

Also, an object of this invention is to provide a system for directing processing fluid in a spray onto a sheet of photographic material within a processing chamber wherein adverse movement of air within that chamber is minimized.

A still further object of this invention is to provide a system of the type indicated which employs improved means for transporting the sheet of photographic material.

Yet an additional object of this invention is to provide a system of the type indicated which includes an improved arrangement for transporting the sheet of photographic material while retaining its desired alignment.

## BRIEF DESCRIPTION OF THE DRAWINGS

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

FIG. 1 is a diagrammatic cutaway side-elevation view of a document copier incorporating the features of the present invention;

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

FIG. 3 is a fragmentary sectional view taken generally along line 3—3 of FIG. 2; and

FIG. 4 is a diagrammatic perspective view of the disc employed in the document copier of FIG. 1.

## SUMMARY OF THE INVENTION

In its illustrated embodiment, the present invention is depicted as comprising part of a document copier system. A disc is mounted for rotatable movement at high speed within a processing chamber and means are provided for feeding a processing fluid onto the face of the spinning disc whereby an atomized spray of the fluid is discharged radially from the disc's wetted surface. Formed at the radial extremity of the processing chamber is a toroidal fluid collecting chamber and means are provided for continually removing the fluid therefrom as it collects therein. An arrangement is provided for advancing sheets of exposed photographic materials through the processing chamber along a path parallel to the disc's axis of rotation and, at such time, the photographic sheet is disposed concentrically of the disc. This sheet advancing arrangement includes two pairs of sheet gripping rollers positioned above the processing chamber and two pairs of such rollers positioned below the chamber. The spacing between the pairs of rollers is such that the sheet material is always gripped between at least two such pairs of rollers whereby the rollers serve to maintain the vertical alignment of the sheet material during such advancement thereof.

In order to suppress adverse movement of air within the processing chamber, the space between the peripheral edge of the spinning disc and a circle described about the axis of the spinning disc and having a radius slightly less than the distance between such axis and the path of movement of the photographic sheet material through the processing chamber is substantially occupied by specially configured members. These members have adjacent surfaces positioned in closely spaced relationship on respective sides of the path followed by an average individual droplet of such fluid as it is discharged from the wetted surface of the spinning disc. Additionally, in this

same connection, a plurality of baffle plates are positioned in the fluid collecting chamber, being equally spaced one from the other therearound and aligned tangentially with respect to a selected circle having the same axis as the axis of rotation of the spinning disc.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

As illustrated in the drawings, the present invention is depicted as being incorporated in a document copier system. A complete photographic copying system generally comprises means for exposing a light-sensitive, image-recording sheet material to a light from a subject, such as a graphic original document, a page of a book, a photograph, etc.; means for treating each such exposed sheet material with a processing fluid to form a visible image of the subject; and means for advancing the image-recording sheet from one station to another within the system and for delivering the final product therefrom in a manner to make it readily accessible to an operator. The exposure system of such apparatus generally comprises means for locating the subject in position for exposure, means for supporting the photosensitive material in position for exposure, and an optical system which includes an objective lens for producing an image of the subject on the photosensitive sheet and means for illuminating the subject. The present invention is specifically directed to a means for treating a sheet of exposed photographic material with a processing fluid which, as indicated, represents only one of a plurality of functions performed within document copying apparatus. Consequently, in order not to unduly complicate the present disclosure, certain of the means for performing the other functions necessarily associated with document copying apparatus, and which may take conventional forms, have intentionally not been shown in the drawings forming part of this specification.

Invention its illustrated embodiment, the present film applies a suitable processing fluid to a "single-sheet" film unit in which a latent image is initially formed in a layer thereof comprising a photosensitive component and from which latent image a visible image is subsequently formed in an image-receiving layer thereof by a diffusion-transfer process. More specifically, the object of processing such a unitary film unit is to form a composite print including a negative image with a silver transfer image formed thereover. Such a film unit typically includes a pigment, or pacifying material, in an amount sufficient to effectively mask the negative image and to form a background for viewing the positive image formed thereover by reflected light. The structure of such a film unit generally comprises a support, preferably opaque in nature, carrying on one of its sides a light-sensitive layer, an opacifying material in this layer and/or in an overlying layer and an image-receiving layer. In either case, the pigment is immobile during the diffusion-transfer process and is of a nature so as to not adversely affect the exposure process wherein the latent image is recorded in the light-sensitive emulsion. The pigment may, for instance, comprise titanium dioxide, while the light-sensitive emulsion may comprise a suitable silver halide and the image-receiving layer may comprise silver precipitating nuclei providing a vigorous silver precipitating environment for reduction of a soluble silver complex transferred thereto to image silver.

An important aspect of such unitary film unit is that the exposure of the light sensitive layer is effected through the image-receiving layer. In preparing the composite print, the outer surface of the silver-receptive stratum of the exposed element is contacted with an aqueous medium, which may contain an alkaline material, a silver halide developing agent and a silver halide solvent, and this aqueous medium diffuses through to the silver halide emulsion layer to develop a negative image and, in a known manner, to form an image-wise distribution of a soluble silver complex. This complex is subsequently transferred, at least in part, by diffusion to the silver-receptive stratum where it is reduced to provide a posi-

tive silver transfer image. The above-named ingredients may be contained initially in the aqueous medium, or in lieu thereof, any or all of them may be contained initially in one of the layers of the film unit, in which latter event a solution of the same is obtained upon permeation of the aqueous medium. Other reagents, e.g., preservatives, antifoggents, etc., may also be provided in the aqueous medium or in one or more layers of the film unit itself for purposes of performing other specific desired functions.

Single-sheet film units of this general type as well as processing compositions for producing a stable image thereon viewable by reflective light are described in further detail in the copending U.S. applications Ser. No. 519,995 of Edwin H. Land, filed on Jan. 11, 1966 and Ser. No. 519,884 of Edwin H. Land and Leonard C. Farney, also filed on Jan. 11, 1966.

However, it should be noted that the present invention is not directed to the chemistry by which visible images are formed in an exposed photosensitive material and/or formed in an image-receiving stratum associated therewith. While an illustrated preferred embodiment of this invention is shown as effecting the application of a processing fluid of the particular type indicated to a film structure of the particular type indicated, the invention itself is also applicable for use with other types of processing fluids and film structures.

The illustrated embodiment of this invention may best be understood by now referring to Fig. 1 of the drawings which illustrates a document copying apparatus 10 incorporating the features of the present invention. As shown therein, this document copying apparatus 10 comprises an enclosure housing 12 mounted on a base support 14. Provided in the top section of the enclosure housing 12 so as to actually form a part thereof is a glass window 16 on which an operator may position a document to be copied face downward. The copying apparatus 10 also includes a suitable arrangement for initially storing a supply of sheets of photographic material 18, of the type previously described, and a sheet advancement system (not shown) which may take a conventional form. This conventional sheet advancement system may be considered that which (1) picks up and transports individual sheets 18 of such photographic material from their initially stored position 15 into their exposure position depicted by the numeral 20, (2) after the exposure operation has been completed, advances the exposed sheet 18 into a position designated 23, wherein it is disposed in operable relationship with the apparatus of the copier 10 comprising the present invention, and (3) subsequently receives the processed sheet 18 from the apparatus comprising the present invention and delivers such sheet into a tray 19 of the copier. The exposure system is not shown in the drawings and may, like the aforementioned sheet advancement system, take a conventional form.

When the exposed sheet of photographic material 18 is delivered to the apparatus of the present invention, it is seated against a support plate 22 forming part of that apparatus and immediately above a processing chamber 24 which is illustrated in more detail in FIGS. 2 and 3 of the drawings. As shown in those figures, this processing chamber 24 is defined by a circular enclosure member 26 to which a plate-like member 28 is connected by a plurality of bolts 30. A specially configured circular recess 32 formed in the enclosure member 26 serves, in conjunction with the inside face 34 of the plate-like member 28, to define the processing chamber 24. Extending from a motor 36 (See FIG. 1) is a drive shaft 38 which passes through a bore 40 in the enclosure member 26 into the processing chamber 24. A disc 42 is affixed to the end 43 of the shaft 38 so as to rotate therewith within the processing chamber 24.

Positioned through the plate-like member 28 in axial alignment with the drive shaft 38 is a bore 44 in which is positioned a fluid feeding device 46. This fluid feeding device 46 is connected to a tank 48 (See FIG. 1) containing a supply of processing fluid 50 of the type previously indicated through piping 52, reservoir chamber 53 and a pump 55. Extending axially upward from the disc 42 through an aperture 58 in the

fluid feeding device 46, is a pin 56, the upper end of which pin terminates within that device 46. It will thus be appreciated that the pump 54 serves to introduce processing fluid 50 from the tank 48 into the reservoir chamber 53 from which it flows by gravity to the fluid feeding device 46. As the fluid 50 leaves the feeding device 46 through its aperture 58, it flows down the pin 56 in an annular stream onto the upper face 54 of the disc 42. Since, at such times, the disc 42 is spinning at a rapid rate, the fluid 50 flows across the disc's surface 54 to its peripheral edge 60 from which it is discharged in the form of an atomized spray 62. As such, the fluid flow across the disc 42 continuously functions to clean its surface 54. While the face 54 of the disc 42 is generally planar in configuration, it may be textured with a multiplicity of very fine radially extending recesses or scratches 64 as shown in Fig. 4 to facilitate the proper flow of the fluid 50 thereacross.

This processing system includes means for advancing the sheets of exposed photographic material 18 through the processing chamber 24 and for maintaining the proper alignment of each such sheet while it is being treated with the processing fluid 50. In this connection, aligned arcuate slots 66 and 68 respectively extend through the plate-like member 28 and the circular enclosure member 26. It will be noted that the aforementioned support plate 22 is arcuate in configuration being mounted on the plate-like member 28 and extending therefrom adjacent the edge of the slot 66 disposed furthest from the axis of the disc 42. Similarly extending from the enclosure member 26 adjacent its slot 68 is another arcuate support plate 72. As shown in Fig. 2 of the drawings, the slots 66 and 68 and the support plates 22 and 72 comprise circular arcs sharing the same axis as the disc 42.

Two cooperating pairs of sheet advancing rollers are positioned both above and below the processing chamber 24. In this connection, rollers 74 and 76 are mounted above the processing chamber 24 so that their peripheral edge surfaces respectively extend through slots 78 and 80 appropriately positioned through the arcuate support plate 22. More specifically, the peripheral edge surfaces of these rollers 74 and 76 extend slightly, for instance, on the order of 0.020 inches, beyond the inside face of the support plate 22. Respectively horizontally aligned with the rollers 74 and 76 are rollers 82 and 84 which are mounted so that their peripheral edge surfaces engage rollers 74 and 76. Similar pairs of rollers, consisting of the cooperating rollers 86 and 88 and cooperating rollers 90 and 92 are mounted in a similar manner below the processing chamber 24 with the peripheral edge surfaces of the rollers 86 and 90 respectively extending through slots 94 and 96 appropriately provided through the support plate 72. Each of these aforementioned rollers is preferably formed of a resiliently compressible material such as a rubber for purposes to now be explained.

At such time as the copier's sheet transporting system (not shown) has advanced an exposed photographic sheet 18 into its position 23 (See Fig. 1), that sheet is seated against the support plate 22 so as to conform with the arcuate configuration of that member. A plurality of belts 100, 102, 104, 106, 108 and 110 serve to connect the rollers 74, 76, 86 and 90 to a motor 112 whereby such rollers are driven in a counter-clockwise direction (as viewed in Fig. 1) whenever that motor is energized.

The copier's sheet advancement system next effects a downward displacement of the sheet 18 along the support plate 22 to introduce the sheet's leading edge into the bite of the cooperating rollers 74 and 82. It will be seen that subsequent advancement of the exposed sheet of photographic material 18 into, through and from the processing chamber 24 is effected by the operation of the aforementioned rollers responsive to energizing the motor 112. Adjacent cooperating pairs of the aforementioned rollers are spaced apart a distance substantially less than the length of the sheet of photographic material 18. For instance, if the sheet of photographic material 18 is 11 inches in length, the rollers 76 and 84 may be respectively spaced five inches above the rollers 86 and 88. In

such case, the rollers 74 and 82 may be respectively spaced five inches above the rollers 76 and 84, while the rollers 90 and 92 may be respectively spaced five inches below the rollers 86 and 88. Thus, as the sheet is advanced into, passed through and withdrawn from the processing chamber 24, it is continually engaged by at least two such pairs of cooperating rollers. This arrangement tends to maintain the proper vertical alignment of the exposed sheet 18 at such times.

An important aspect of this invention is that, as the sheet of exposed photographic material passes through the spray of fluid 50 within the processing chamber 24, it is disposed concentrically with respect to the disc 42, i.e., each point on its surface facing the disc 42 is equidistant from the axis about which the disc rotates. This eliminates the "1/R" error associated with disc-type spray coating techniques wherein the object being sprayed is planar in configuration or certain sections thereof are otherwise spaced a greater distance from the spinning disc than other sections thereof. In the present arrangement, the fluid 50 from the spray 62 is uniformly applied across the entire face of the sheet 18. Another important advantage provided by this concentric alignment of the sheet 18 is that it imparts an inherent stiffness to the sheet that eliminates any need for providing sheet supporting means within the processing chamber. Obviously, any such sheet supporting means within the chamber would present problems, e.g., wetting the back of the sheet, adversely affecting the coating process unless compensated for in one way or another.

As droplets of the processing fluid 50 are discharged from the surface 54 of the spinning disc 42, they follow a path tangential to the disc and react with molecules of air within the processing chamber 24 to impart a motion to such molecules. It has been determined that such movement of air within the processing chamber 24 has a detrimental effect on the pattern of the fluid spray 62 as it travels between the disc and the sheet of exposed photographic material 18. More specifically, the uniformity of the fluid coating applied to the sheet 18 decreases as the air movement within the processing chamber 24 increases. In order to suppress such undesirable whirling and buffeting air movement within the processing chamber 24, a circular member 114 is mounted on the closure member 26. This member 114 is provided with a circular aperture 116 to receive the drive shaft 38 and a circular recess 118 in which the disc 42 is rotatably mounted. It has further been determined that individual droplets of fluid 50 expelled from the disc 42 follow a parabolic path as they move vertically across the processing chamber 24. Therefore the upper face 120 of the member 114 is parabolically configured so as to gradually increase the spacing between that member and the horizontal inside face 34 of the plate-like member 28 as it extends an increasing distance away from the axis of the disc 42. Actually, in the illustrated embodiment, the upper face or surface 120 of the member 114 extends radially from a point substantially horizontally aligned with the generally planar surface 54 of the disc 42 in gradually increasing spacing with respect to the inside face 34 of the plate-like member 28. Thus, the inside face 34 of the member 28 and the upper face 120 of the member 114 extend radially within the processing chamber 24 in substantially closely spaced relationship on respective sides of the path followed by an average individual droplet of the processing fluid 50 in leaving the disc 42. This arrangement restricts movement of air within the processing chamber 24 adjacent the fluid spray 62 as it expands radially from the disc to its area of contact with the sheet of exposed photographic material 18.

The peripheral edge of the circular member 114 and annular portions of the members 26 and 28, in combination, serve to define a toroidal fluid collecting chamber 122 located at the radial extremity of the processing chamber 24. Means are provided in the form of an aperture 124 through the enclosure member 26 and piping 126 to return the fluid 50 to the tank 48 (See Figs. 1 and 3) as it collects in the chamber 122. It will be recognized that, in an alternate arrangement, the fluid discharged from the disc 42 within the processing chamber 24

and not serving to wet the surface of the photographic sheet 18 may be discharged from the system. In such latter instance, it is desirable that the various components forming the processing system, in particular the disc 42 itself, the amount of fluid 50 applied thereto and the means controlling disposition of the sheet of photographic material therearound, be designed so as to minimize the amount of excess fluid discharged from the disc.

Further means to suppress the adverse movement of air within the processing chamber 24 are provided in the form of a plurality of baffle plates 128 mounted within the fluid collecting chamber 122 and equally spaced therearound. Preferably, these plates are tangentially aligned with respect to the peripheral edge surface of the circular member 114 and positioned so that the fluid spray 62 impinges thereon. Thus, any movement of air within the fluid collecting chamber 122 will be substantially restricted to movement between adjacent such baffle plates 128.

A typical system designed in accordance with the concepts of the present invention may employ a disc 42 having its top surface 54 textured in the manner shown in Fig. 4 and with a diameter of 3 1/2 inches, rotating at a speed of 22,000rpm. The motor 112 of this system effects movement of the sheet of exposed photographic material 18 through the processing chamber 24 at one inch per second, while the sheet is spaced a distance of four inches from the axis of the disc 42. Processing fluid 50 having a viscosity of approximately three centipoise is applied to the spinning disc at a rate of 0.1cc. per second. The upper face 120 of the member 114 employed in this typical system is parabolic in configuration and varies in its spacing with respect to the inside face 34 of the plate-like member 28 from 0.030 inches to 0.150 inches as it extends radially outwardly within the processing chamber 24.

As the processed exposed photographic sheet 18 leaves the processing chamber 24 and is advanced downwardly along the arcuate support plate 72, it is picked up by the aforementioned sheet advancing system of the copier 10 and deposited into the tray 19 where it is readily accessible to the operator.

Those familiar with the photographic arts will readily appreciate the novel and highly unique advantages of this system for treating a sheet of photographic material with a processing fluid. Most importantly, this system functions to apply a precision coating of such fluid onto such sheet material. This invention may be practiced or embodied in other ways without departing from the spirit or essential character thereof. The preferred embodiment described herein is therefore illustrative and not restrictive, the scope of the invention being indicated by the appended claims and all variations which come within the meaning of the claims are intended to be embraced therein.

What is claimed is:

1. In a system for treating one surface of a substantially flat sheet of photographic material with a fluid, the improvement comprising:

- a substantially enclosed processing chamber;
- a disc within said chamber;
- means for rotating said disc;
- means for feeding such fluid onto said rotating disc whereby a fine spray of such fluid is dispersed radially of said disc in a substantially uniform pattern;
- means for advancing such sheet of photographic material into said chamber, through such spray and thence out of said chamber; and
- means for aligning such sheet of material concentrically with said disc as it passes through such spray with its said one surface facing towards said disc.

2. The invention of claim 1 wherein said rotating means effects a rotation of said disc about its axis and said advancing means effects a movement of such sheet of photographic material through such spray along a path parallel to said axis.

3. The invention of claim 1 additionally comprising means for suppressing the movement of air within said chamber responsive to the movement of such fluid from said disc.

4. In a system for treating a sheet of photographic material with a fluid, the improvement comprising:

- means for defining a processing chamber;
- a disc mounted within said processing chamber;
- means for rotating said disc;
- means for feeding such fluid onto said rotating disc whereby a fine spray of such fluid is dispersed radially of said disc in a substantially uniform pattern; and
- means for advancing such sheet of photographic material through said processing chamber and such spray with such sheet of material being disposed concentrically with said disc as it passes through such spray; and
- means for suppressing the movement of air within said chamber responsive to the movement of such fluid from said disc, said suppressing means comprising a pair of members extending in a radial direction from said disc and positioned in substantially closely spaced relationship on respective sides of the path followed by an average individual droplet of such fluid in leaving said disc.

5. The invention of claim 4 wherein said processing chamber is circular in configuration and its radial extremity comprises a substantially toroidal fluid collecting chamber and said suppressing means additionally comprises at least one baffle plate positioned in said fluid collecting chamber.

6. In a system for treating a sheet of photographic material with a processing fluid, the improvement comprising:

- a processing chamber;
- a disc mounted for rotation within said chamber;
- means for rotating said disc;
- means for feeding such processing fluid onto a face of said rotating disc whereby a fine spray substantially uniform such fluid is dispersed radially of said disc in a substantially uniform pattern;
- means for advancing such sheet of photographic material through such spray; and
- means for suppressing the movement of air within said chamber responsive to the movement of such fluid from said disc, said suppressing means comprising a pair of members extending in a radial direction from said disc and positioned in substantially closely spaced relationship on respective sides of the path followed by an average individual droplet of such fluid in leaving said disc.

7. The invention of claim 6 wherein said face of said disc is basically planar and is positioned horizontally within said processing chamber, the surface of one of said members adjacent such spray of fluid extends within said processing chamber in a horizontal plane above such path and the other of said members extends radially from a point substantially horizontally aligned with said face of said disc and adjacent thereto in gradually increasing spacing with respect to said one member.

7. The invention of claim 6 wherein said face of said disc is basically planar and is positioned horizontally within said processing chamber, the surface of one of said members adjacent such spray of fluid extends within said processing chamber in a horizontal plane above such path and the other of said members extends radially from a point substantially horizontally aligned with said face of said disc and adjacent thereto in gradually increasing spacing with respect to said one member.

8. The invention of claim 6 wherein said suppressing means additionally includes a plurality of baffle plates positioned circumferentially around said disc.

9. The invention of claim 6 additionally including a toroidal fluid collecting chamber having a common axis with said disc and spaced from the peripheral surface of said disc and wherein said suppressing means includes at least one baffle plate positioned in said collecting chamber.

10. In a system for treating a sheet of photographic material with a processing fluid, the improvement comprising:

- a circular processing chamber, the radial extremity thereof comprising a substantially toroidal fluid collecting chamber;
- a disc mounted for rotation within said chamber;

means for rotating said disc;

means for feeding such processing fluid onto a face of said rotating disc whereby a fine spray of such fluid is dispersed radially of said disc in a substantially uniform pattern;

means for advancing such sheet of photographic material through such spray; and

means for suppressing the movement of air within said chamber responsive to the movement of such fluid from said disc, said suppressing means including at least one baffle plate positioned in said fluid collecting chamber.

11. The invention of claim 10 wherein said baffle plate is positioned in the path of such fluid spray.

12. The invention of claim 10 wherein said suppressing means includes a plurality of baffle plates positioned in said fluid collecting chamber and equally spaced from one another therearound.

13. The invention of claim 12 wherein each said baffle plate includes a surface positioned substantially tangentially of a selected circular arc within said processing chamber.

14. The invention of claim 10 additionally including means for removing such fluid from said collection chamber as it is collected therein.

15. In a system for treating a sheet of photographic material with a processing fluid, the improvement comprising:

a disc;

first means for rotating said disc about its axis;

a plate-like member positioned over said disc and extending radially of said disc;

second means for cooperating with said plate-like member to define therewith a processing chamber of circular configuration having a toroidal fluid collecting chamber adjacent its radial extremity;

third means for advancing such sheet of material through said processing chamber along a path parallel to said axis with such sheet of photographic material being disposed concentrically with said disc and spaced therefrom; and

fourth means for feeding such processing fluid onto said rotating disc whereby a fine spray of such fluid is dispersed radially of said disc in a substantially uniform pattern;

said second means including a member having a circular recess provided therein in which said disc is rotatably positioned and a surface extending radially from said recess adjacent the surface of said disc adapted to have such fluid fed thereonto to a circle adjacent the path of travel of such sheet of material through said processing chamber in closely spaced relationship to said plate-like member, whereby the open space within said processing chamber is minimized.

16. The invention of claim 15 additionally including means within said fluid collecting chamber for suppressing the movement of air therein responsive to the movement of such fluid from said disc.

17. The invention of claim 16 wherein said suppressing means comprises a plurality of baffle plates spaced around said fluid collecting chamber.

18. The invention of claim 15 wherein said radially extending surface gradually tapers away from the plane of said disc surface in its direction of extension away from said disc.

19. The invention of claim 17 wherein each of said baffle plates includes a surface positioned substantially tangentially of a selected circular arc within said processing chamber.

20. In a system for treating a sheet of photographic material having a predetermined length with processing fluid, the improvement comprising:

a processing chamber;

a disc mounted for rotation about its axis within said

chamber;

means for rotating said disc;

means for feeding such processing fluid onto said rotating disc whereby a fine spray of such fluid is dispersed radially of said disc in a substantially uniform pattern; and

means for advancing such sheet of material through such spray along a path parallel to said axis, said advancing

means including a plurality of cooperating pairs of rollers, each said pair of rollers adapted to grip such sheet of material between the respective rollers thereof and at least two said pairs of rollers being positioned on each side of such spray with said pairs of rollers being spaced apart predetermined distances so that such sheet of material is continually gripped by at least two of said pairs of rollers as such sheet of material is moved into such spray, passed through such spray and withdrawn from such spray, whereby said pairs of rollers serve to maintain the alignment of such sheet of material at such times.

21. The invention of claim 20 wherein two of said pairs of rollers are positioned on each of two opposite sides of said processing chamber.

22. In a system for treating a sheet of photographic material with a fluid the improvement comprising:

means for defining a processing chamber through which such sheet of photographic material is adapted to be advanced, said processing chamber being circular in configuration and its radial extremity comprising a substantially toroidal fluid collecting chamber;

a disc mounted within said chamber;

means for rotating said disc;

means for feeding such fluid onto said rotating disc whereby a fine spray of such fluid is dispersed radially of said disc in a substantially uniform pattern;

means for advancing such sheet of photographic material through such spray with such sheet of material being disposed concentrically with said disc as it passes through such spray; and

means for suppressing the movement of air within said chamber responsive to movement of such fluid from said disc, said suppressing means including at least one baffle plate positioned in said fluid collecting chamber.

23. The invention of claim 22 wherein said suppressing means includes a plurality of baffle plates positioned in said fluid collecting chamber and equally spaced from one another therearound.

24. In a system for treating a sheet of photographic material with a fluid, the improvement comprising:

a disc;

means for rotating said disc;

means for feeding such fluid onto said rotating disc whereby a fine spray of such fluid is dispersed radially of said disc in a substantially uniform pattern; and

means for advancing such sheet of photographic material through such spray with such sheet of material being disposed concentrically with said disc as it passes through such spray, said advancing means including a plurality of cooperating pairs of rollers, each said pair of rollers adapted to grip such sheet of material between the respective rollers thereof and at least two said pairs of rollers being positioned on each side of such spray with said pairs of rollers being spaced apart predetermined distances so that such sheet of material is continually gripped by at least two of said pairs of rollers as such sheet of material is moved into such spray, passed through such spray, and withdrawn from such spray, whereby said pairs of rollers serve to maintain the alignment of such sheet of material at such times.

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