United States Patent

Johnson et al.

[15] **3,704,661**

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[54] **LIQUID DEVELOPING APPARATUS**

[72] Inventors: **Robert M. Johnson; Dennis E. Toby; Robert M. Koch,** all of Cleveland, Ohio

[73] Assignee: **Addressograph-Multigraph Corporation,** Mount Prospect, Ill. ; by said Toby and Koch

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[21] Appl. No.: **32,314**

[52] **U.S. Cl.** .....**95/89 R,** 118/261

[51] **Int. Cl.** **G03d 5/06**

[58] **Field of Search** .....95/89 R, 89 A, 89 L, 89 G, 95/94 R; 118/8, 113, 120, 247, 261, 119

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Primary Examiner—Samuel S. Matthews
Assistant Examiner—Fred L. Braun
Attorney—Sol L. Goldstein

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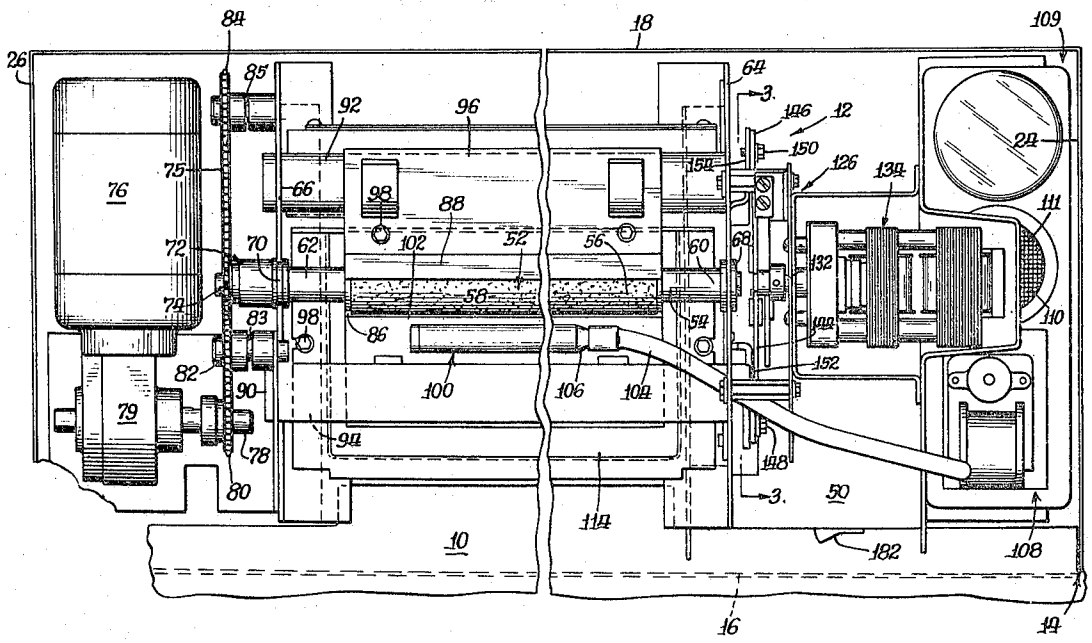
[57] **ABSTRACT**

Apparatus for developing diazo-sensitized copy material by the application thereto of a quantity of developer liquid includes an applicator roller to the surface of which there is supplied developer liquid, a wiper member mounted for engagement with the roller surface to wipe excess developer liquid therefrom and a pressure applying member mounted for engagement with the roller surface to form a developing zone therewith through which sensitized copy material is passed for development. Both the wiper and pressure applying members are movable into and out of engagement with the roller surface, depending upon the operating condition of the apparatus.

12 Claims, 4 Drawing Figures



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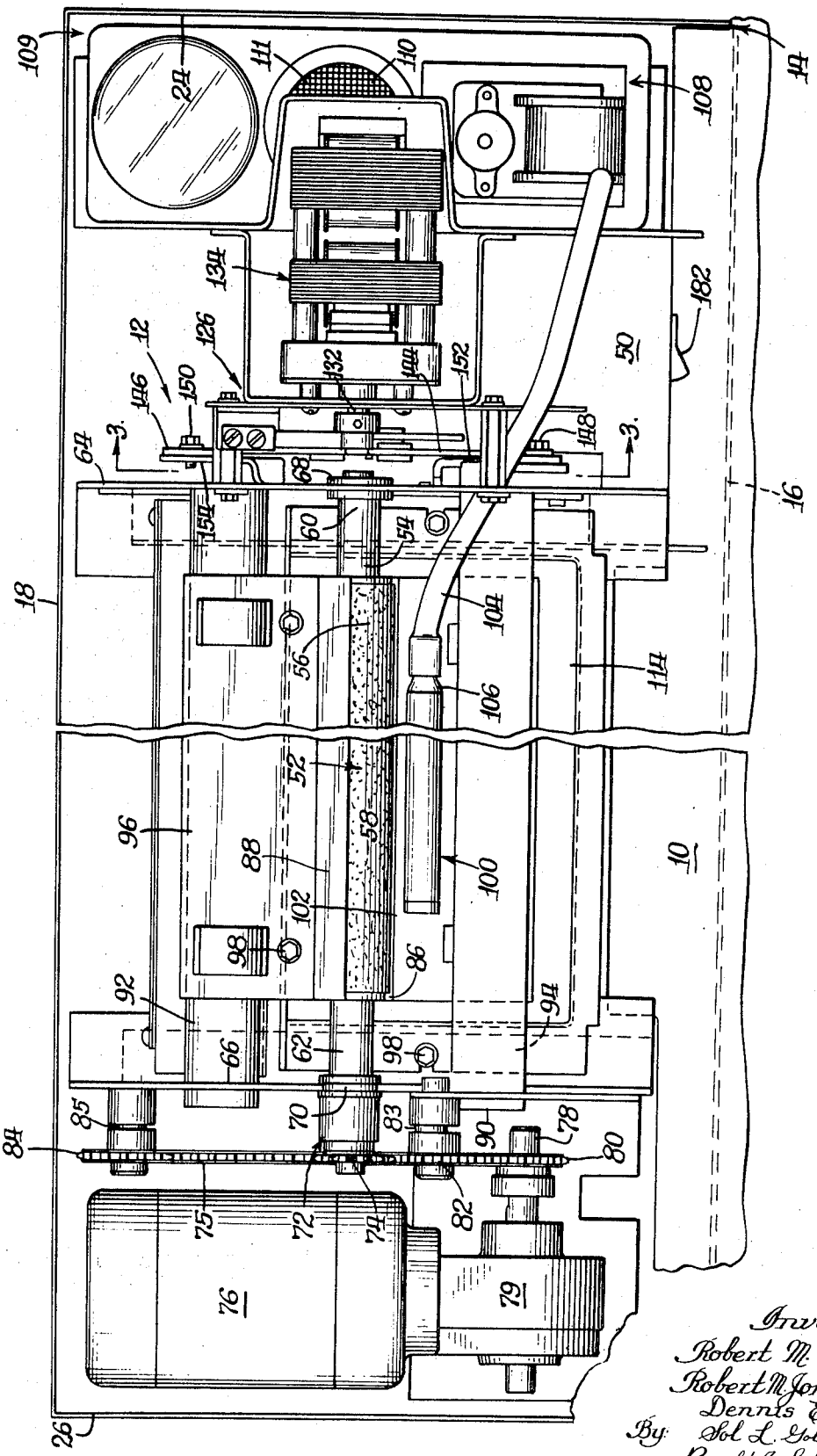
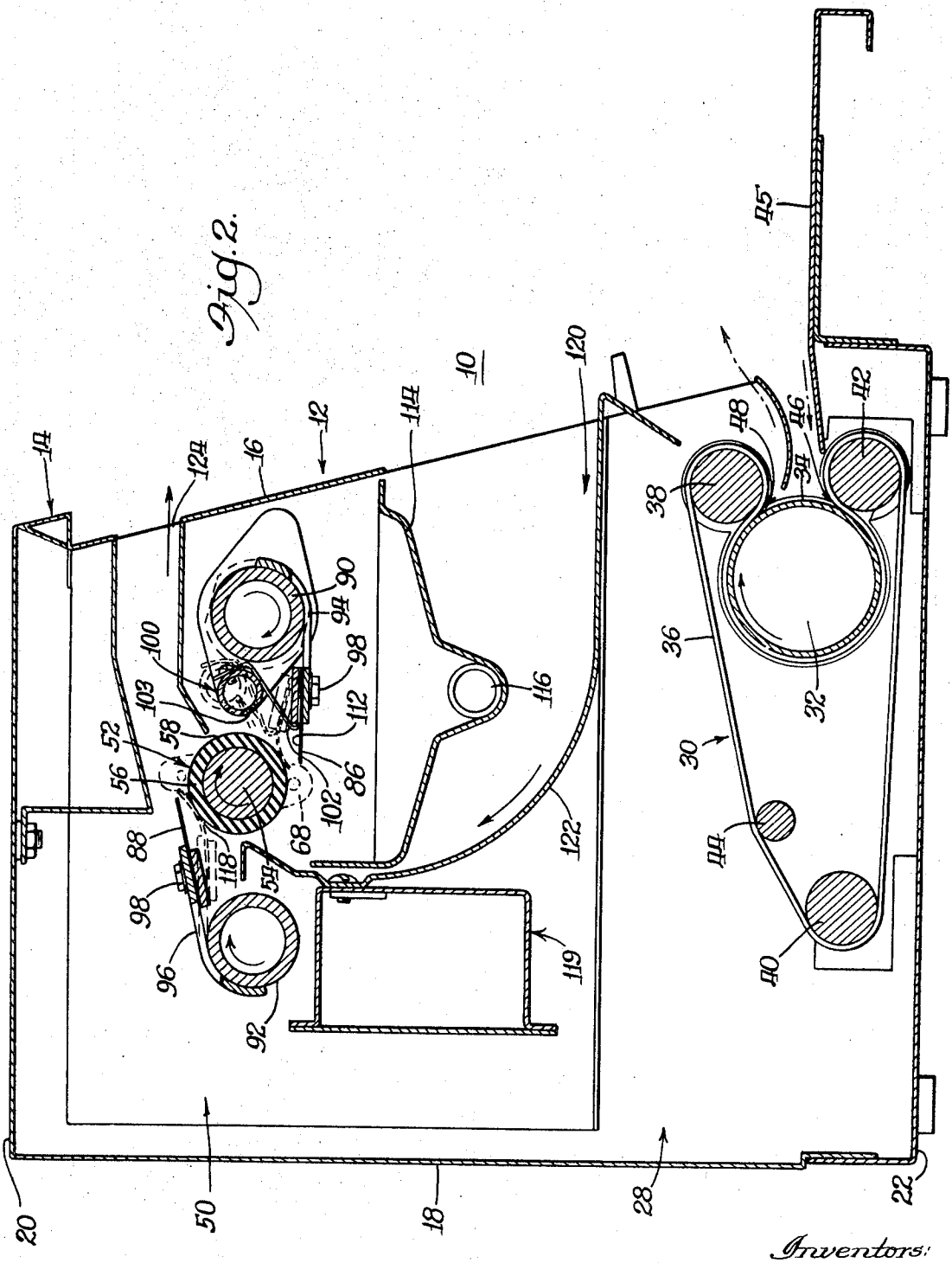


Fig. 1.

Inventors:
Robert M. Koch
Robert M. Johnson
Dennis E. Toby
By: Sol L. Goldstein
Ronald J. LaPorte Atty

Fig. 2.



Inventors:
Robert M. Koch
Robert M. Johnson
Dennis E. Doby
By: Sol L. Goldstein
Ronald J. LaPorte Atty.

Fig. 3.

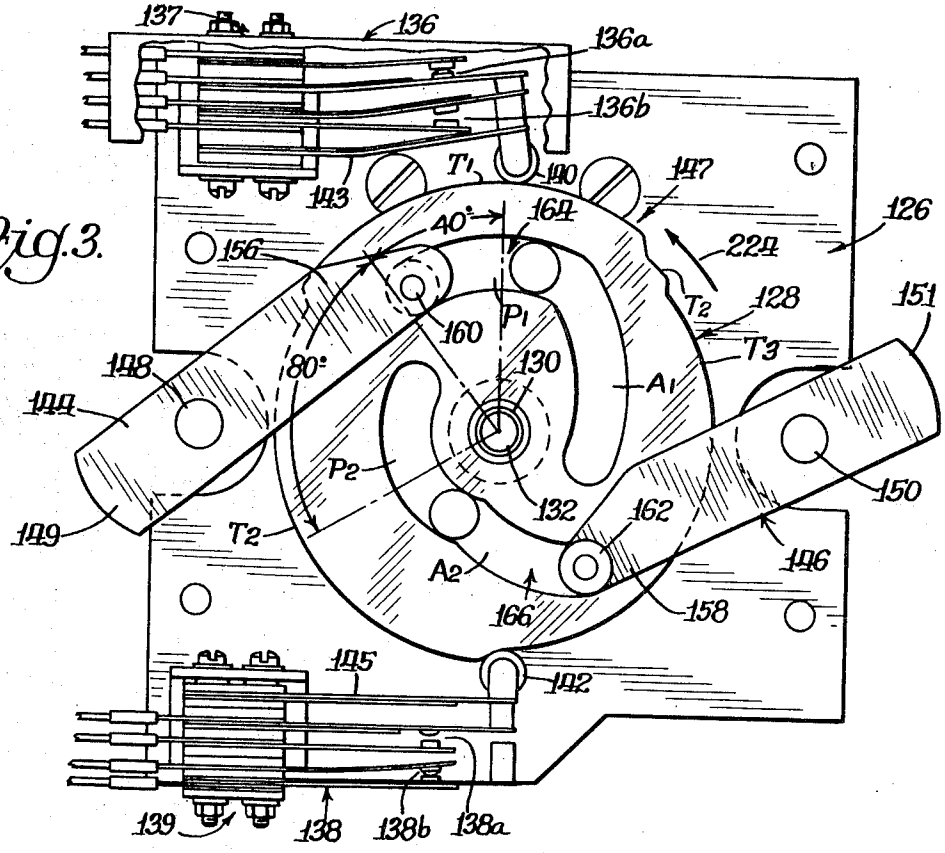
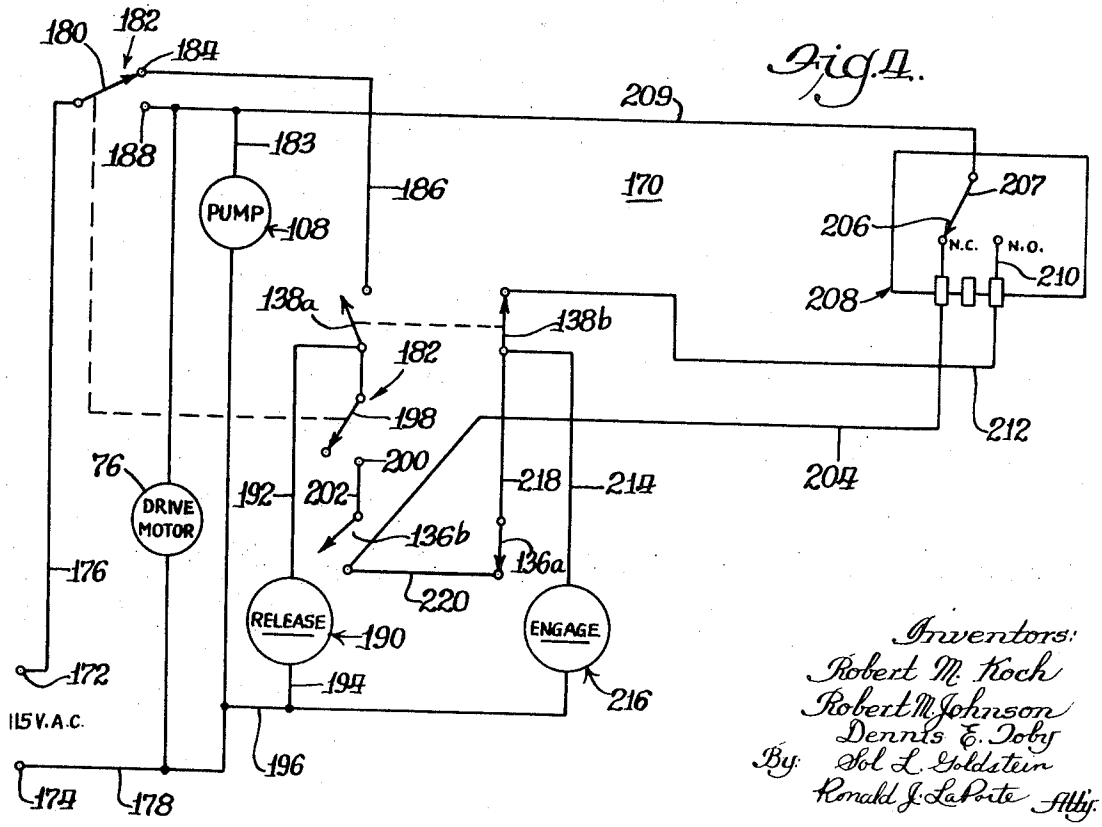


Fig. 4.



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Robert M. Koch
Robert M. Johnson
Dennis E. Doby
By: Sol L. Goldstein
Ronald J. LaPorte Atty.

LIQUID DEVELOPING APPARATUS

BACKGROUND OF THE INVENTION

This invention relates generally to apparatus for developing diazotype copy material and more particularly to apparatus of the above-mentioned type which applies a liquid developing agent in metered quantities to exposed diazo sensitized copy material, thereby to produce dry-to-the-touch developed copies.

The method of developing diazo sensitized copy material by the application of relatively small, metered quantities of liquid developer is described in U.S. Pat. No. 3,446,620, issued May 27, 1969, and assigned to the same assignee.

Apparatus for carrying out the above-described method is also disclosed in U.S. Pat. Applications Ser. Nos. 831,685, filed June 9, 1969, now Pat. No. 3,626,833, and 831,399, filed June 9, 1969, now U.S. Pat. No. 3,640,203 assigned to the same assignee.

In the last-mentioned applications there is described developing apparatus comprising an applicator roller which has a uniquely prepared surface adapted to receive and carry a limited quantity of developer fluid. Against the surface of the applicator roller and parallel to the axis of rotation thereof, is a mechanical wiper used for removing excess fluid from the applicator roller surface. A second, pressure applying roller is in driving engagement with the applicator roller to form a developing zone therebetween. Copy material fed between the rollers is developed by the application of the liquid under pressure provided by the pressure roller.

The apparatus of the aforementioned application operates well to provide fully developed, dry-to-the-touch copies with a minimum of developing fluid. However, in the case wherein very wide diazo copy material (i.e., in the range of 40 plus inches) is to be developed, applicator and pressure rollers must also be of lengths equal to or greater than the width of the material.

In practice a pressure roller used in the above-described apparatus weighs approximately 1 pound for each inch of length. Thus, a roller of 40 plus inches would weigh 40 or more pounds. The great weight of such a roller member presents engineering problems in that added support is required for the roller members and greater costs for the fabrication of such an apparatus would be incurred.

In addition to the last-mentioned problems, because of the length of the rollers, irregularities in the surfaces, non-uniform pressures therebetween along the lengths of the rollers and/or curves in the rollers themselves which occur in fabrication or during use, might tend to produce a non-uniform application of developer fluid to copy material passing through the developing zone, resulting utimately in unacceptable, non-uniformly developed copies.

SUMMARY OF THE INVENTION

Accordingly, it is a general object of the present invention to provide new and improved apparatus of the general type described for developing diazo sensitized copy material which avoids the drawbacks discussed.

It is a more specific object of the invention to provide an apparatus of the last-mentioned type which can be used successfully and efficiently in the development of relatively wide diazo sensitized copy material by applying uniformly thereto, a predetermined quantity of liquid developing agent.

Briefly, a preferred embodiment of the developing apparatus according to the invention comprises an applicator roller member adapted to carry a limited quantity of developer fluid and mounted for rotation. Adjacent the surface of the applicator roller and extending the length of and parallel thereto, is a pressure applying blade mounted for tangential engagement with the roller surface, the area between the blade and roller surface forming a copy material developing zone. A second, fluid metering blade is also mounted for tangential engagement with the surface of the applicator roller. The second blade is mounted 180° about the applicator roller from the first-mentioned blade to equalize the forces applied to the roller. A fluid carrying member, substantially equal in length to the applicator roller, is located in the area between the fluid applying blade and the applicator roller. A series of holes is formed in the member, from which fluid is pumped onto the metering blade member. The fluid is dispersed by the blade member over the surface of the roller, and the excess fluid wiped from the roller surface by the fluid metering blade is carried into a trough beneath the applicator roller.

To ensure the uniform dispersion of developing fluid over the roller surface and to prevent fluid droplets from building up in the developing zone between the applicator roller surface and the pressure applying blade, provision is made to move the pressure applying blade, into engagement with the roller surface a predetermined time after engagement of the wiper blade with the roller surface; sufficiently long to meter a uniform layer of fluid onto the roller surface. The latter is accomplished automatically by means of a novel electrical circuit and control-linkage arrangement upon energization of the power switch of the developer apparatus. The blades are likewise removed sequentially from contact with the roller surface upon deenergization of the apparatus. Removal of the blades from contact with the applicator roller surface when the developing apparatus is not in use prevents marking of the roller surface by the blades which could detrimentally affect the quality of subsequent copies produced by the apparatus.

DESCRIPTION OF THE DRAWINGS

A better understanding of the present invention and its organization and construction may be had by referring to the description below in conjunction with the accompanying drawings wherein:

FIG. 1 is a plan view of a diazotype copying machine incorporating the developing apparatus according to the invention;

FIG. 2 is a side sectional view of the copying machine of FIG. 1;

FIG. 3 is an enlarged side view of the cam driver used for moving the metering and pressure applying blades of the developing apparatus into and out of engagement with the surface of the developer fluid applicator roller taken along the line 3—3 of FIG. 1; and

FIG. 4 is a schematic diagram of the electrical circuitry for operating the developer apparatus in accordance with the present invention.

DETAILED DESCRIPTION

Referring now to the drawings more in detail, FIGS. 1 and 2 illustrate a diazotype copying machine **10**, including developing apparatus **12** according to the invention.

The copying machine comprises a housing **14** including front and rear walls **16, 18**, upper and lower walls **20, 22**, and side walls **24, 26**, interconnecting the upper, lower, front and rear walls.

A lower section **28** of the housing (FIG. 2) includes copy sheet exposure apparatus **30** for exposing a diazo sensitized copy sheet to light while the copy sheet is in surface-to-surface contact with an original tracing, for the purpose of imaging the copy sheet.

The particular copy sheet exposure apparatus shown in FIG. 2 of the drawings comprises a rotatable lamp **32** about the outer surface **34** of which is carried a sandwiched copy sheet and original tracing (not shown) for exposure of the former. An endless belt **36** extends about the outer surface of the lamp **32** and is also mounted for movement along rollers **38, 30**, and **42**. A smaller roller **44** provides tension to the belt **36** to ensure that the latter is in close contact with the lamp **32**.

The sandwiched original tracing and copy sheet are fed over shelf **45** into an entrance **46** adjacent roller **42** between belt **36** and outer surface **34** of lamp **32**. The original and copy sheet are carried about lamp **32** and depart at exit **48** adjacent roller **38**. At this point the copy sheet has been exposed. The copy sheet is separated from the original tracing, and is now ready for development.

In the upper section **50** of the copying machine housing **14**, there is located a preferred embodiment of the developing apparatus **12** according to the invention.

The developing apparatus **12** comprises an applicator roller **52** having a central shaft portion **54** of metal and an outer or peripheral layer **56** of a smooth nonporous, resilient material such as rubber. The outer surface **58** of the peripheral layer **56** is specially prepared to form a developer fluid carrier surface having irregular depressions of varying depths and sizes. A more detailed description of the carrier surface will be given hereinafter.

Roller **52** is mounted for rotation at ends **60, 62** of shaft portion **54** between vertically extending walls **64, 66**, in bearings **68, 70** mounted on the walls (FIG. 1). An extension member **72**, including a sprocket wheel **74** is mounted at end **62** of shaft **54**. A drive motor **76** provides the power for driving the applicator roller **52** through shaft **78** extending from the gear train **79** of motor **76**, and including a sprocket drive wheel **80** mounted thereon. An endless chain **75** connected to the aforementioned sprocket wheels serves to transfer the power provided by motor **76** to the applicator roller **52** for rotation of the latter.

The chain **75** also extends about sprocket wheels **82, 84** which are mounted on shafts **83, 85**, respectively, extending from wall **66**. The last-mentioned wheels provide a path over which endless chain **75** moves to drive applicator roller **52**.

Positioned on opposite sides of roller **52**, spaced 180° from each other thereabout, is a pair of blade members **86, 88**, respectively. Each of the blade members **86, 88** is mounted on a respective rotatable support herein taking the form of a tubular shaft **90, 92**, by means of a blade holder member **94, 96** attached thereto, respectively. The blades, each fabricated from a flat length of spring steel or the like material, are fastened to a respective blade holder member by fasteners, such as bolts **98**.

The shafts **90,92**, which are also mounted between walls **64, 66** are rotatable in the direction of the arrows (FIG. 2) to cause blade members **86, 88** to engage the surface **58** of roller **52**, as shown in dotted lines. As can be seen, the blade members are caused to be bowed when in contact with the roller surface to make tangential contact therewith.

A tubular conduit **100** mounted on an L shaped bracket **102**, connected to blade holder member **94** is provided to dispense developer liquid to the surface **58** of roller **52**. A flexible tube **104** coupled at one end **106** of dispenser tube **100** is connected via developer fluid pump **108** to a reservoir **109** of fluid developer **110**. Fluid pumped through tube **104** exits from tubular conduit **100** through spaced apertures **103** (FIG. 2) provided in the wall thereof.

Developer liquid dispensed from the tube **100** is poured onto the surface **112** of blade **86**, and upon the latter making engagement with the surface of rotating roller **52**, is applied or metered onto the roller surface **58**.

Metering blade member **86** together with the roller **52** having the specially prepared surface **58** delivers a controlled amount of developer fluid to a copy sheet being developed. The blade member **86** wipes away excess developer fluid which in turn runs back into a trough **114** mounted beneath the applicator roller and metering blades. The excess fluid is channeled through an opening **116** in trough **114**, (FIG. 2), and through a screen-like filter **111** to the fluid reservoir **109** so that it may be reused. The filter screen **111** serves to remove minute paper particles which may have found their way into the developer fluid during the development process, and which, if not removed, could eventually become lodged beneath the blade members, causing streaks along the surface of subsequently developed copy sheets. Cleaning of the filter screen **111** periodically to remove the paper particles build up thereon is desirable.

As mentioned heretofore, the surface **58** of the applicator roller **52** is specially prepared to carry a predetermined quantity of developer liquid used to develop diazo sensitized copy sheets.

The texture or finish of the applicator roller **52** is important to the successful operation of the developer apparatus. The amount of developer fluid retained on the roller surface **58** and carried to the copy sheet being developed is dependent on the surface characteristics of the roller. It has been found that the surface best suited for carrying the proper amount of liquid for development of dry-to-the-touch copy sheets is one of varying depths and sizes providing a predetermined degree of average center line smoothness expressed in terms of micro-inches in depth. It has been concluded that an applicator roller having a center line average smoothness in the range of 10–200 micro-inches provides a satisfactory finish according to the invention. The limits of fluid application provided by a properly prepared roller surface reside between 0.5 grams and 3.0 grams per square meter of the copy material.

For a more detailed description of the roller surface and its preparation, the reader's attention is directed to U.S. Pat. applications, Ser. Nos., 831,685 and 831,399, assigned to the same assignee.

The second blade member **88**, when engaged with roller surface **58**, applies to the latter surface pressure along a line of contact therewith equal to the force applied by blade member **86**, 180° about the roller **52**. The contact area forms a developing zone **118**, (FIG.2) through which copy sheets are passed to be developed.

It is important that the forces applied to the roller surface are equal. If they are not, a tendency for the roller to shift will be prevalent as well as a possible disfiguration of the surface of the roller. In both of the last-mentioned cases, the ultimate quality of copies produced in the developer will be affected.

A copy sheet entering the developing apparatus at entrance **120** is manually urged upwardly along curved guide member **122** mounted on fixture **119** within section **50** of the housing (FIG. **2**) into the developing zone **118**, whereat the leading edge of the paper is gripped between the pressure applying blade member **88** and the roller **52**. The rotation of roller **52** in the direction indicated by the arrow, transports the copy sheet through zone **118** whereat developer fluid is applied in printing fashion, to the imaged copy sheet. The developed copy sheet emerges from the developing apparatus at exit **124** in a dry-to-the-touch condition.

As mentioned heretofore, the blade members **86, 88** are each mounted on members **90, 92** respectively, which can be rotated to cause the engagement and disengagement of the blade members with the surface **58** of applicator roller **52**.

The physical movement of the blade members is controlled by a control-linkage and electrical contact assembly **126**, shown in greater detail in FIGS. **3** and **4** of the drawings.

The previously mentioned assembly **126** includes a control-linkage member, preferably taking the form of a cam member **128** having a generally circular shape and mounted for rotation at the center **130** thereof to the shaft **132** of an electrically operated motor **134** (FIG. **1**) capable of being operated in a forward (engage) and reverse (release) direction by means of motor engage and release coils, respectively, to be discussed hereinafter.

Two sets of electrical contact arrangements **136, 138**, each including two pairs of leaf spring contacts **136*a***, **136*b*** and **138*a*** , **138*b***, respectively, are mounted, by means of insulating mounting arrangements **137, 139**, respectively, of the well known type, adjacent cam member **128** at opposite sides thereof (180° about the circumference of the cam member). The contacts are operated by means of cam follower rollers **140, 142**, connected to the stacked contacts by means of additional leaf springs **143, 145**, respectively. Each of the rollers rides along the external surface or edge **147** of the cam member **128**. Lead wires as seen in FIG. **3**, are connected to the terminal ends of the respective contacts. The actual connections to contacts **136*a***, **136*b***, and **138*a***, **138*b*** will be described hereinafter when discussing the circuit diagram of FIG. **4**.

The cam member is constructed to include three outer track portions, **T1, T2, T3**, each at a different, predetermined distance measured along a radius of the cam member from the center of the latter, and along which the follower rollers **140, 142** ride. As the cam member **128** is rotated, contacts of the arrangements **136, 138** are opened or closed, as the case may be, to in turn energize or deenergize motor **134**.

A pair of arms **144, 146**, each of which is pivotally connected at a first end **149, 151**, respectively, by fasteners **148, 150** (FIGS. **1** and **3**) to a respective end **152, 154** (FIG. **1**) of one of the rotatable tubular shafts **90, 92**, is provided to translate the rotatable movement of the cam member **128** into a driving force for movement of the blade members **86, 88**. The opposite ends **156, 158** of arms **144, 146** are each coupled by a cam follower wheel or roller **160, 162** respectively, to cam member **128**. The last-mentioned wheels being mounted for rolling engagement in specially designed cut-outs or tracks **164, 166** in cam member **128**. Each of the tracks **164, 166** includes a passive track portion P1, P2 and an active portion A1, A2, respectively. Movement of the rollers **160, 162** along the passive portions of the tracks **164, 166**, causes no physical movement of the respective blade members, and movement in the active portions of tracks **164, 166** causes the blades to be moved into or out of engagement with the applicator roller surface **58**, depending upon the direction of rotation (clockwise or counterclockwise) of cam member **128**. The operation of the cam member **128** and followers will be explained hereinafter.

Turning now to FIG. **4** of the drawings, there is illustrated therein a preferred embodiment **170** of the circuit for controlling the movement of the blade members **86, 88** into and out of engagement with the applicator roller **52**.

The circuit **170** is powered by a conventional **115** volt AC source, (not shown) connected across terminals **172, 174** each of which is in turn connected to a lead **176, 178**, respectively. Lead **176** is connected to a first armature **180** of the manual operated on-off switch **182**. Switch armature **180** is normally connected to a first contact **184** which is in turn connected to a lead wire **186**. The last mentioned wire **186**, is connected to normally open contacts **138*a*** of leaf contact spring pair **138**.

A second contact **188** of the manual on-off switch **180** is provided for connection with armature **180**. The movement of armature **180** to contact **188** supplies power via lead **183** to operate pump motor **108**, thereby to begin pumping fluid to the tube member **100** (FIG. **1**) and to begin the movement of blades **86, 88**. Pump motor **108** is connected back to the power source via lead **178**. The movement of switch arm **180** to contact **188** also provides power from the source to energize drive motor **76** for rotating applicator roller **52**.

The contacts **138*a***, connected to manual on-off switch **182** via lead **186**, are connected via lead **192** to motor release coil **190** of motor **134** which in turn is connected through lead **194, 196**, back to the AC power source.

The contacts **138*a*** are also connected to a second armature **198** of manually operated on-off switch **182**. The armature **198** is normally in the open position with respect to contact terminal **200** of the switch. The last-mentioned contact terminal is connected via lead wire **202** through switch contacts **136*b*** of contact pair **136**, via lead **204** to the normally closed sets of contacts **206**

of a three second time delay relay **208**. The armature **207** of relay **208** is connected back to switch contact **188** of switch **182** via lead **209**.

The normally open contacts **210** of relay **208** are connected via lead **212**, through normally closed contacts **138**b and lead **214** to motor engage coil **216**. The last-mentioned coil is connected back to the power source via leads **196, 178**.

Normally closed contacts **138***b* are connected also via lead **218** through normally closed contacts **136***a* of contact pair **136**, and leads **220** and **204** to the normally closed contacts **206** of time delay relay **208**.

For purposes of affording a more complete understanding of the invention, it is advantageous now to provide a functional description of the mode in which the component parts thus far described cooperate.

Looking again at FIG. **4**, the circuit **170** as it appears, is in the unoperated, normal state. When it is desired to operate the developer apparatus of the invention, the manual on-off switch **182** is depressed, causing armature **180** thereof to be moved from contact **184** to contact **188**, opening the connection to lead **186** and closing operating circuits to pump motor **108** drive motor **76** and a circuit via lead **109** and the normally closed contacts **206** of time delay relay **208**.

At this time applicator roller **52** starts to rotate and fluid begins to be pumped from the reservoir **110** to tube **100** for distribution onto blade **86** and over the surface of the applicator roller.

Power is applied through the normally closed contacts of relay **208**, via lead **204** through lead **220** and normally closed contacts **136**a and leads **218** and **214** to the motor engage coil **216** to begin rotation of cam **128** in the direction of arrow **224** (FIG. **3**). The cam is rotated approximately forty degrees in the counterclockwise direction as seen in FIG. **3** to an intermediate position. As the cam turns, rollers **140, 142** roll along the edge **147** thereof.

Roller **140** remains on the track T1 for a time but then moves to track T2, whereby contact **136***a* is caused to be opened. The opening of switch **136***a* (FIG. **4**) deenergizes the engage coil **216** to stop the rotation of cam **128**. At this time switch contacts **136***a*, **136***b* are both in an open condition since roller **140** is at rest on track T2. The roller **142** also moves from the track T3 to T2, and causes contacts **138***a* to be closed. At this time both contacts **138***a*, **138***b* are in a closed condition.

During the forty degree rotation of cam **128**, rollers **160** and **162** also were moved along respective cut-outs **164, 166** in cam **128**. Roller **160** moved along the passive portion P1 of cut-out **164** while roller **162** moved along the active portion A2 of cut-out **166**; thus, developer fluid metering blade **86**, FIG. **1**, is brought into engagement with the applicator roller surface.

During the 3 second delay time of relay **208**, developer fluid flowing from apertures **103** in feed tube **100**, is metered over the surface **58** of roller **52**. After the three second delay time is completed, relay armature **207**, moves from normally closed contact **206** to normally open contact **210**. Power from the **115** volt AC source now is provided again through closed contacts **138**b to motor engage coil **216**, once again to cause the rotation of cam member **128** in the direction (counterclockwise) of arrow **224** (FIG. **3**).

The cam member **128** this time rotates an additional eighty degrees from its intermediate position. During the eighty degree rotation, roller **142** moves from track T2 to track T1, whereby switch contacts **138**b are opened.

The opening of contacts **138**b breaks the connection from the power source to the engage coil **216**, deenergizing motor **134** and stopping the rotation of cam member **128**.

During the last-mentioned eighty degree rotation of cam member **128**, roller **162** was moved through the passive portion P2 of cut-out **166**, so that no additional movement of blade member **86** was effected. Roller **160**, however, was moved through the active portion A1 of cut-out **164**, causing the pressure applying blade member **88** to be moved into engagement with the surface of applicator roller **52**.

Once both blades are in engagement with the rotating applicator roller, the developing apparatus is deemed to be in a running condition, and diazo copies may be fed through the developer section **50** of the diazo copying machine **10** (FIG. **2**) for processing.

Upon completion of the developing process, the developing apparatus is restored to its normal unoperated state by operation of the manual on-off switch **182** to its off position. In doing so, armature **280** of the switch is moved from engagement with contact **188** into engagement with contact **184**, and armature **198** thereof is moved out of engagement with contact **200**.

A connection is now made from the 115 volt AC source to motor release coil **190**. The connection is from the source via leads **176, 186**, through contacts **138***a* which remain closed because of the position of roller **142** on the track T1, and lead **192**. With motor release coil **190** energized, motor **134** (FIG. **1**) is operated to rotate cam member **128** in a clockwise direction opposite to the direction indicated by arrow **224**. The cam is rotated a full 120° back to the home or normal position.

During the last-described rotation, blade members **86, 88** are sequentially removed from engagement with the applicator roller, blade member **88** being disengaged first, followed by blade member **86**. This movement occurs because of the movement of rollers **160, 162** through the active and passive portions of the respective cut-outs in reverse order from that explained for the initial operating cycle.

Once returned to the home position, contacts **138***a* are opened to stop the motor **134**, and pump motor **108** is operated to an off condition.

While the preferred means for moving the blade members **86, 88** into and out of engagement with the applicator roller **52** are the cam and circuit arrangement described above, it will be understood that such sequential movement could be obtained by other means, such as, for example, a series of gears arranged to control the movement of the blade members with a time delay arrangement operating the drive mechanism for the gears. It is therefore contemplated to cover by the present application any such equivalent means.

It has been explained that a preferred developing apparatus according to the invention includes means for moving the blade members, **86, 88** into and out of engagement with the applicator roller sequentially as

described. Such sequential movement is important since it affords a uniform wetting of the applicator roller prior to bringing the pressure applying blade member into contact with the roller, thereby to allow for a faster starting time as well as to prevent contact of the blade member against a relatively dry roller surface which might have a detrimental effect thereon.

While it is preferred in the subject apparatus to move the pressure applying and wiper blade members toward and away from the applicator roller, the result achieved thereby can also be achieved through movement of the roller toward and away from the blade members, as well as through the movement of both the blades members and the roller toward and away from each other.

What we claim is:

1. Apparatus operable between an on and off condition for developing sensitized sheet material by the application to said material of an amount of developer liquid, said apparatus comprising:

liquid applicator roller means mounted for rotation, said roller means having a surface adapted to carry a quantity of liquid,

means for supplying said developer liquid to said roller means,

wiper means for removing excess developer liquid from said surface of said roller, said wiper means located adjacent said roller means and mounted for engagement with said roller surface,

pressure applying means mounted adjacent said roller means for engagement with the surface of said roller means, said pressure applying means and said roller means forming a developing zone along a line of contact therebetween through which said sensitized sheet material is passed for development, and means for moving said wiper means and said pressure applying means relative to said roller means into and out of engagement therewith.

2. Apparatus as claimed in claim 1 wherein said wiper means and pressure applying means are moved into engagement with said applicator roller means in sequence.

3. Apparatus as claimed in claim 2 wherein said wiper means is moved into engagement with said roller means prior to said pressure applying means.

4. Apparatus as claimed in claim 1 wherein said pressure applying means includes a flat, resilient blade member mounted for tangential engagement with said roller surface, said blade member extending substantially the length of said roller means.

5. Apparatus as claimed in claim 1 wherein said wiper means comprises a flat, resilient blade member mounted for tangential engagement with the surface of said roller means, and extending substantially the length thereof.

6. Apparatus as claimed in claim 1 wherein said wiper means and pressure applying means are positioned at predetermined locations about the circumference of said applicator roller means so as to equalize the forces applied to said roller means.

7. Apparatus as claimed in claim 6 wherein said wiper means and pressure applying means are located at positions 180° from each other about the circumference of said roller means.

8. Apparatus for developing sensitized sheet material by the application to said material of a predetermined amount of developer liquid, said apparatus comprising:

an applicator roller mounted for rotation, said roller having a surface adapted to carry a predetermined quantity of developer liquid,

means for supplying said developer liquid to said roller surface,

wiper means for removing excess developer liquid from the surface of said roller, said wiper means located adjacent said roller and mounted for movement into and out of engagement with said roller surface,

pressure applying means mounted adjacent said roller for movement into and out of engagement with said roller surface, said pressure applying means and said roller surface forming a developing zone along an area of contact therebetween through which said sensitized sheet material is passed for development, and

means for moving said pressure applying means and wiper means into engagement with said roller during the operation of said apparatus and out of engagement with said roller upon discontinuing the operation of said apparatus, said means including a movable control-linkage member connected to said wiper means and pressure applying means, whereby a first movement of said member causes said wiper and pressure applying means to engage said roller surface, and a second movement of said member causes said wiper and pressure applying means to become disengaged with respect to said roller surface.

9. Apparatus as claimed in claim 8 wherein said wiper means and pressure applying means each include an elongated, flat resilient blade member, mounted on a support member adapted for movement toward and away from the surface of said applicator roller, and wherein said support members are connected to said control-linkage member, whereby movement of said member in a first direction causes said blade members to engage said roller surface, and movement in a second direction causes said blade members to become disengaged from said roller surface.

10. Apparatus as claimed in claim 9 wherein said movement of said control-linkage member in said first direction moves said blade members sequentially into engagement with said roller surface, said wiper means engaging said surface prior to said pressure blade member.

11. Apparatus as claimed in claim 10 wherein said means for applying developer liquid to said roller surface includes a source of developer liquid, dispensing means in communication with said source mounted adjacent said roller means, and pump means for pumping said liquid from said source to said dispensing means for distribution onto the surface of said roller means, and wherein said pump means is operable to pump liquid to said dispensing means during the operation of said apparatus.

12. Apparatus for developing sensitized sheet material by the application to said material of a predetermined amount of developer liquid, said apparatus comprising:

an applicator roller mounted for rotation, said roller having a surface adapted to carry a predetermined quantity of developer liquid,

means for supplying said developer liquid to said roller surface,

wiper means for removing excess developer liquid from the surface of said roller, said wiper means located adjacent said roller and mounted for movement into and out of engagement with said roller surface,

pressure applying means mounted adjacent said roller for movement into and out of engagement with said roller surface, said pressure applying means and said roller surface forming a developing zone along an area of contact therebetween through which said sensitized material is passed for development, and

means for moving said pressure applying means and wiper means into engagement with said roller during the operation of said apparatus and out of engagement with said roller upon discontinuing the operation of said apparatus, said means including a movable control-linkage member connected to said wiper means and pressure applying means, whereby a first movement of said member causes said wiper and pressure applying means to engage said roller surface, and a second movement of said member causes said wiper and pressure applying means to become disengaged with respect to said roller surface, and said member being connected to said pressure applying means by a first arm member and to said wiper means by a second arm member.

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