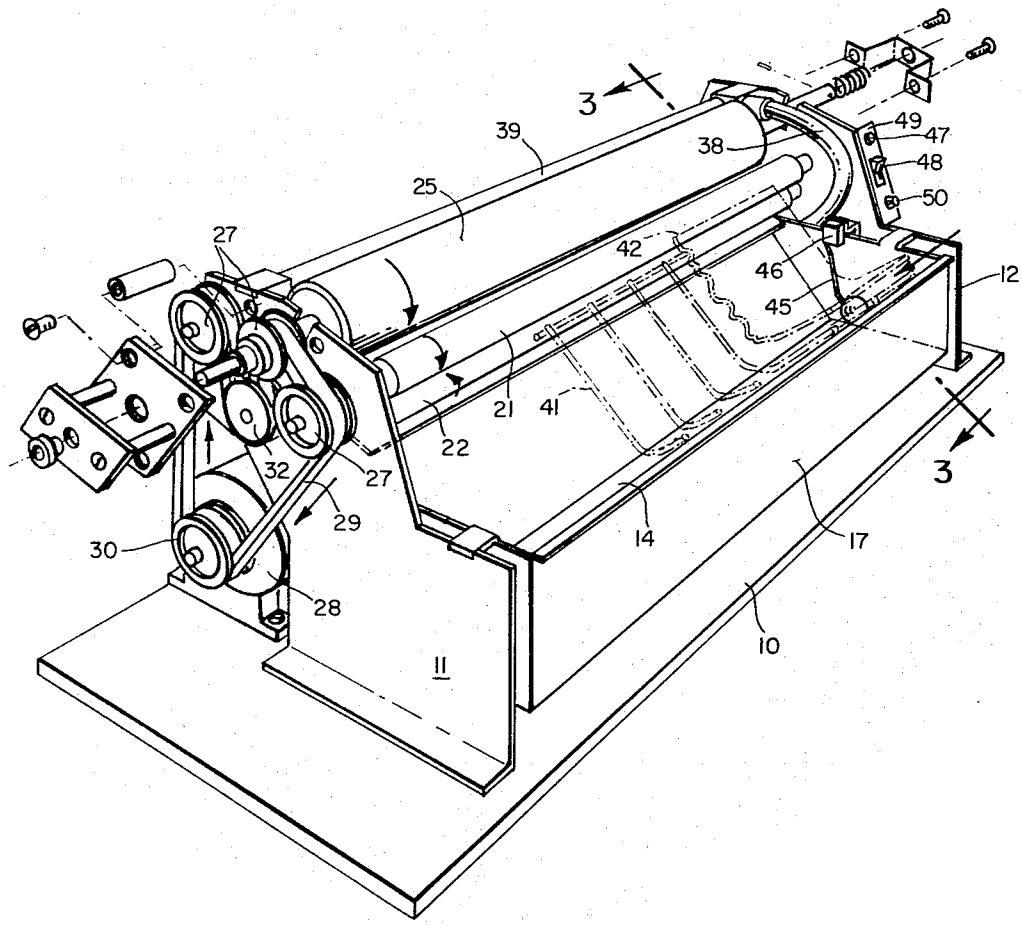
Dec. 19, 1967 W. R. BECK, JR 3,358,642

APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

Filed March 17, 1966 8 Sheets-Sheet 1

FIGURE 1



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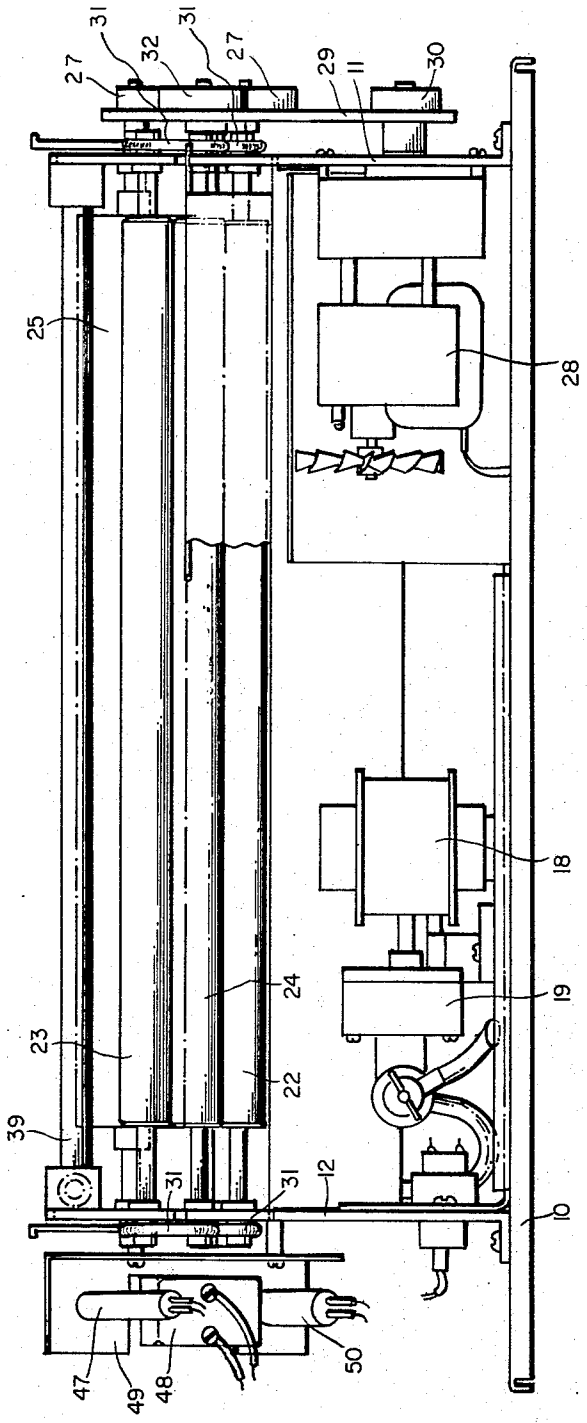
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APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

Filed March 17, 1966 8 Sheets-Sheet 2

FIGURE 2



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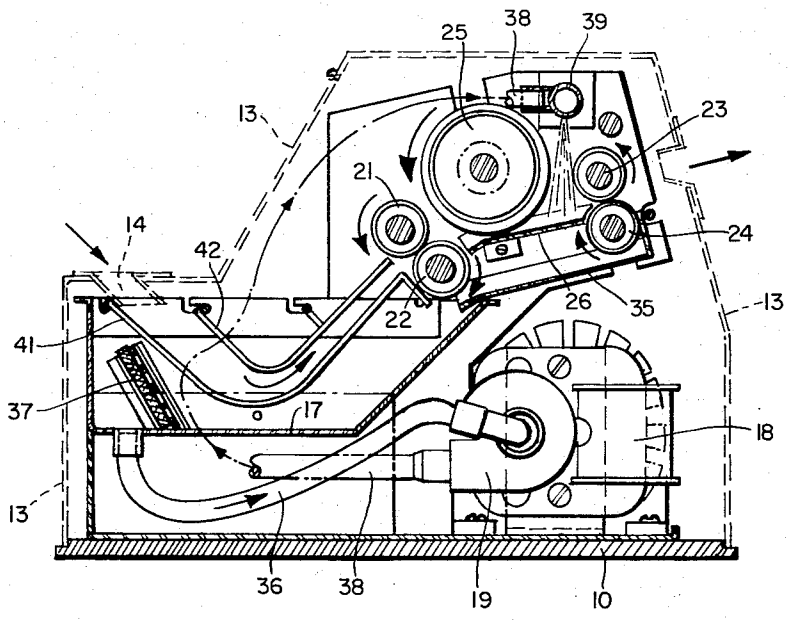
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APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

Filed March 17, 1966 8 Sheets-Sheet 3

FIGURE 3



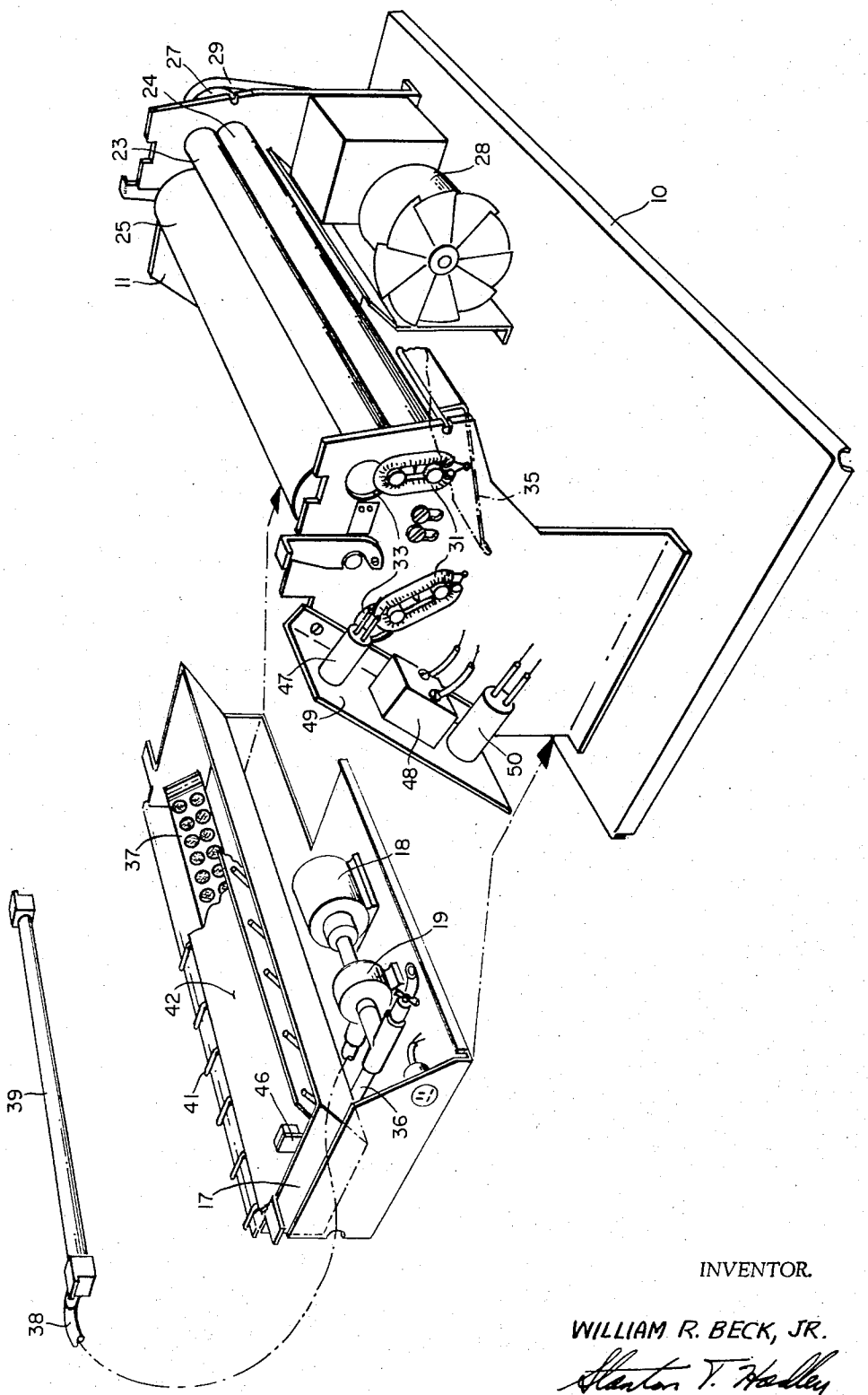
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APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

Filed March 17, 1966 8 Sheets-Sheet 4

FIGURE 4



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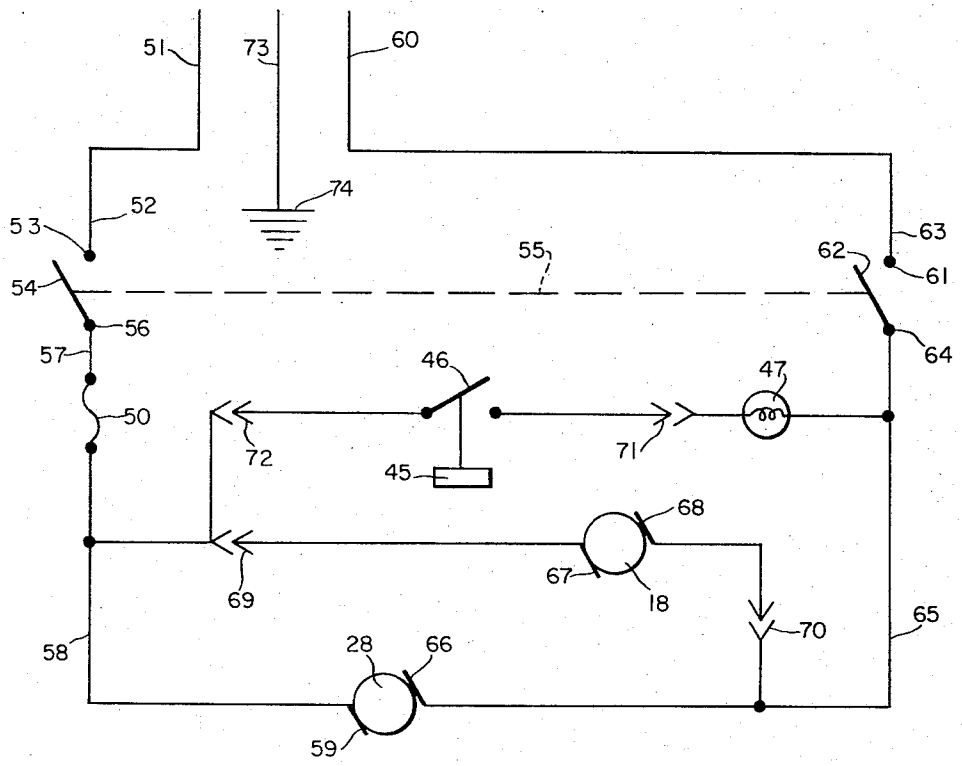
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Dec. 19, 1967 W. R. BECK, JR 3,358,642

APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

Filed March 17, 1966 8 Sheets-Sheet 5

FIGURE 5



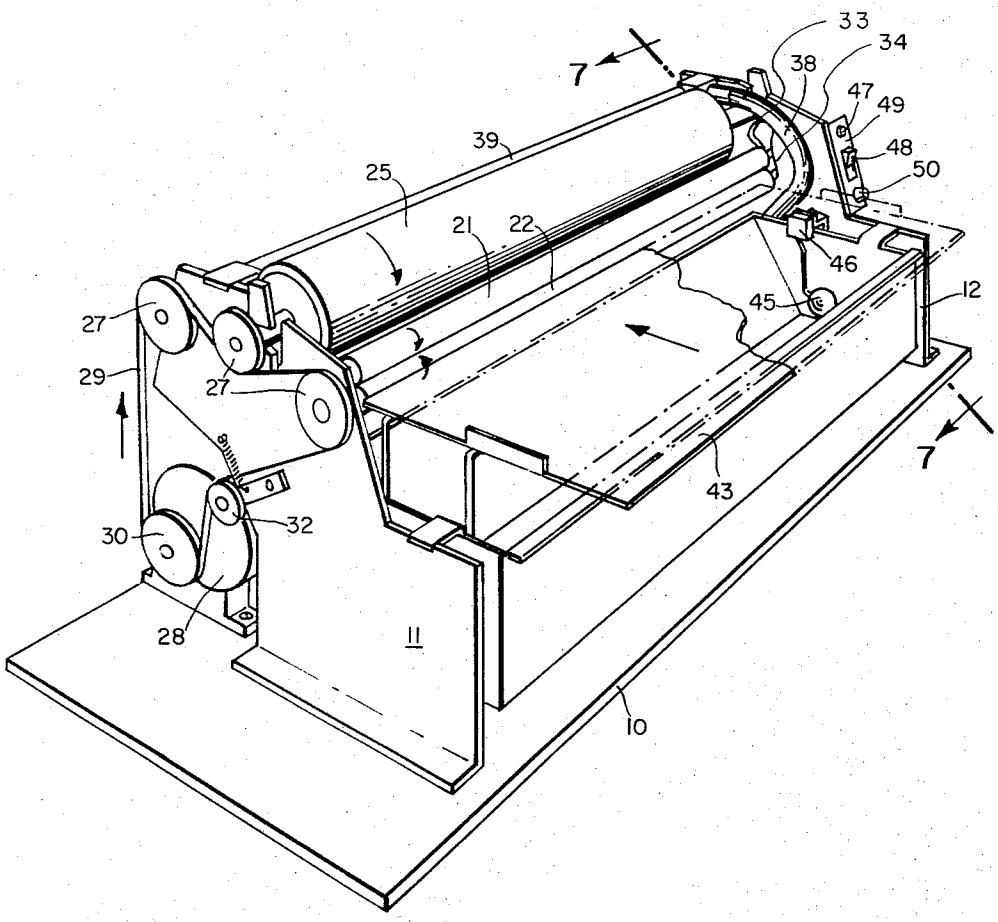
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APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

Filed March 17, 1966 8 Sheets-Sheet 6

FIGURE 6



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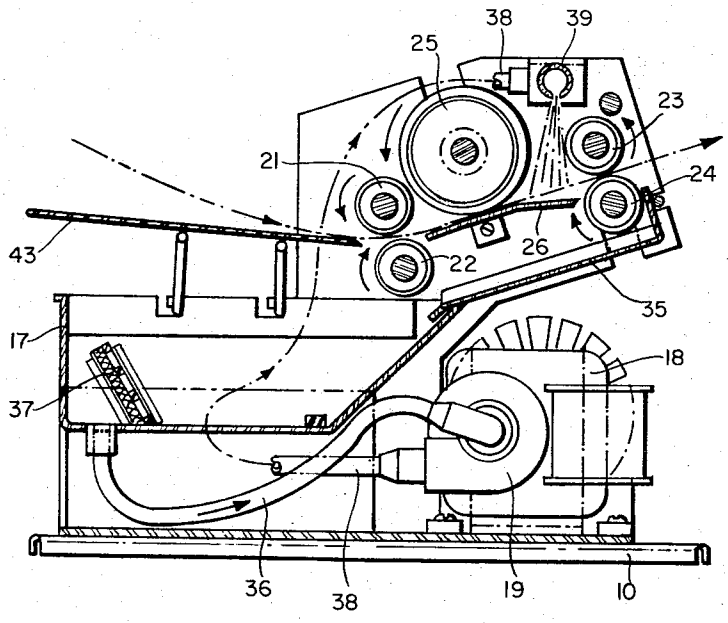
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APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

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FIGURE 7



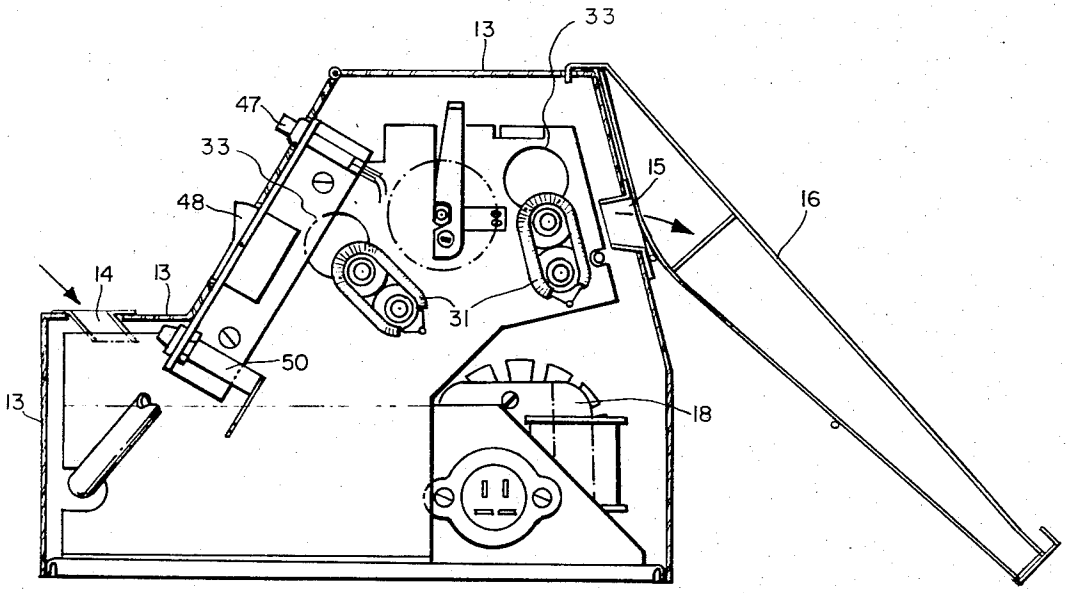
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Filed March 17, 1966 8 Sheets-Sheet 8

FIGURE 8



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United States Patent Office 3,358,642 Patented Dec. 19, 1967

3,358,642

APPARATUS FOR PREWETTING PHOTOELECTROSTATIC OFFSET MASTERS

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Filed Mar. 17, 1966, Ser. No. 535,188
10 Claims. (Cl. 118—109)

This invention relates to apparatus for prewetting a photoelectrostatic master carrying an image on its surface which has been formed by direct photoelectrostatic reproduction to render its normally hydrophobic background areas hydrophilic in nature without altering the hydrophobic character of the image areas, thereby adapting the master for use as a plate for offset printing.

Photoelectrostatic masters comprise a flexible base sheet which is adapted by its form and dimensions for attachment to the plate cylinder of an offset printing press. This base sheet carries on its surface a photoelectrostatic coating comprising a photoconductive grade of zinc oxide dispersed in a matrix of a synthetic resin. The surface of this photoelectrostatic coating is inherently hydrophobic in nature. The image which is formed on the surface of this photoelectrostatic coating is formed by a selectively deposited resinous material which is fused on the surface or which is deposited thereon from a liquid toner, and like the photoelectrostatic coating, is inherently hydrophobic in nature. Exposed areas of the surface of the photoelectrostatic coating form the background of the image.

Various aqueous prewetting compositions have heretofore been developed for application to the surface of a photoelectrostatic master to render it suitable for use as an offset printing plate by changing the hydrophobic character of the background areas to a hydrophilic one causing them to be wettable by water, while leaving the image areas still hydrophobic and wettable with an oleaginous printing ink.

Thus the steps of producing multiple offset printed copies by the use of a photoelectrostatic master are (1) reproducing an image on its surface; (2) treating the image-bearing surface with an aqueous prewetting composition; and (3) printing copies by the use of the resulting offset printing plate. The first and third of these steps are now highly developed, requiring only minutes in the production of hundreds of copies. However, the second step is relatively time-consuming and forms a bottleneck in this method of producing multiple copies.

This second stage has heretofore been carried out by manually swabbing the image-bearing surface of the photoelectrostatic master with a fibrous pad of, for example, cotton, which is moistened with an aqueous solution of a prewetting agent. This manual swabbing is time-consuming since it must be carried out with extreme care to uniformly coat the image-bearing surface with a thin film of the aqueous solution, while avoiding leaving untreated streaks on the surface, the deposition of puddles of excess solution on the surface or the marring of the image by abrasion.

It is the principal object and advantage of this invention to provide a new and improved prewetting apparatus for treatment of the image-bearing surface of a photoelectrostatic master.

It is an additional object and advantage of this invention to provide apparatus for the treatment of the image-bearing surface of a photoelectrostatic master with a prewetting solution which is convenient to use, is rapid in operation and efficient in the application of a uniform thin film of the solution on the surface, without streaking, leaving puddles of the solution and without marring the image on the surface.

It is an additional object and advantage of this invention to provide apparatus for the treatment of the image-bearing surface of a photoelectrostatic master with a prewetting solution, which apparatus performs a scrubbing function which serves to substantially reduce or eliminate residual fused toner resin in areas where the sheet is non-imaged, thereby upgrading the quality of the resulting reproduced prints by reducing background haze.

In accordance with the invention, first and second sheet transfer means are spaced apart from each other and adapted to advance a photoelectrostatic master sheet from an input position through a treating station where at least a portion of a prewetting process is performed and to an exit position. A guide and bearing plate is disposed between the first and second sheet transfer means and adapted to guide the photoelectrostatic master sheet issuing from the first sheet transfer means to the second sheet transfer means. A scrubber means is adapted to contact the surface of a photoelectrostatic master passing over the guide and bearing plate with relative motion between the surface of the photoelectrostatic master sheet and the scrubber means. A reservoir is provided containing an aqueous prewetting solution which is sprayed onto the portion of the photoelectrostatic master issuing from between the scrubber means and the guide and bearing plate by means of a nozzle directed toward the guide and bearing plate between the scrubber means and the second sheet transfer means. Means are also provided for circulating aqueous prewetting solution from the reservoir through the nozzle and onto the photoelectrostatic master sheet and for returning the aqueous prewetting solution to the reservoir.

An advantageous feature of the invention is that the photoelectrostatic master sheet is conveyed automatically and rapidly through the prewetting apparatus by means of a sheet transfer means such as pairs of rolls, at least one of the rolls of each pair being driven. Reliable passage of the sheet from one sheet transfer means to another is insured by the intermediate guide and bearing plate which is preferably contoured in a manner such that the leading edge of the sheet is directed toward or guided into the second transfer means.

An additional feature of the invention is the relative motion created between the scrubber means, which may comprise a roll having a resilient, sponge-like layer on its surface, and the surface of the photoelectrostatic master sheet. Such relative motion is preferably in the direction of forward motion of the sheet and provides automatic scrubbing action which insures the subsequent application of a uniform thin film of a prewetting solution on the surface of the sheet. As will be subsequently pointed out, the apparatus of the invention provides a convenient means for accomplishing such relative movement while utilizing a single drive mechanism for the scrubber means and the sheet transfer means.

Additional objects of this invention and its various advantageous features will become apparent from the following detailed description thereof, when read in conjunction with the accompanying drawings, in which:

FIGURE 1 is a perspective view of an embodiment of the apparatus which is equipped with a feed rack assembly which immerses an image-bearing photoelectrostatic master sheet in a prewetting solution before it is subjected to a scrubbing action in the roll assembly of the apparatus,

FIGURE 2 is a rear elevation of the apparatus shown in FIGURE 1 showing part in section,

FIGURE 3 is a right end elevation showing part in section taken along the line 3—3 of FIGURE 1,

FIGURE 4 is an exploded perspective view of the apparatus shown in FIGURE 1 when viewed from a different angle,

FIGURE 5 is a schematic circuit diagram illustrating an electrical system suitable for use in all of the embodiments of the apparatus illustrated herein,

FIGURE 6 is a perspective view of an alternative form of apparatus of the invention which utilizes a feed rack and directs an image-bearing master sheet directly into the nip of the entrance rolls, but is otherwise similar to the apparatus shown in FIGURE 1,

FIGURE 7 is a cross-section of the alternative form of apparatus of the invention taken along line 7—7 of FIGURE 6, and

FIGURE 8 is a right end elevation taken outside the roll support plate and showing a still further embodiment of apparatus of the invention.

Referring to FIGURES 1, 2 and 3, it will be seen that this apparatus has a base plate **10** which, as shown by FIGURE 1, carries a left side plate **11** and a right side plate **12**. The apparatus is enclosed in a shell or cabinet **13**, as shown in phantom outline by FIGURE 3. The cabinet **13** may be made of metal or plastic and is provided with an entrance slot **14** through which photoelectrostatic masters are fed to the apparatus and an exit slot 15 from which the offset printing plate emerges from the apparatus. A wire rack **16** may be detachably hung on the cabinet **13** as shown in FIGURE 8 in a position to receive offset printing plates emerging from the exit slot **15**. The shell or cabinet **13** is not attached to the base plate **10** and can be conveniently removed to expose the mechanism of the apparatus by merely lifting it upwardly.

Still referring to FIGURES 1, 2 and 3, the tank or reservoir **17** for an aqueous prewetting solution rests on the base plate **10** and as shown by FIGURE 1 is of a width which fits snugly between the side plates **11** and **12**. This reservoir **17** is not attached to the base plate **10** and, after the removal of the cabinet **13** from the apparatus, can be slid forwardly in the manner illustrated in FIGURE 4 to permit free access to its interior and to the electric motor **18** shown by FIGURE 2 and the circulating pump **19** shown by FIGURES 2 and 3, each of which is attached to the base plate **10** by screws.

The sheet transfer means employed in this embodiment of the invention comprise two pairs of rolls which are parallel to each other and spaced apart. The rolls of each pair are in contact to form a nip between them each of which is in a substantially horizontal plane. Each of the rolls has a structural metal core cylinder and a resilient surface which may be, for example, a natural or a synthetic rubber. At least one of the rolls of each pair is provided with a driving means which drives the rolls of each pair in the same direction and at the same peripheral speeds. Each of the rolls may be provided with a direct driving means, although it is usually necessary to provide only one roll of each pair with a direct drive, while leaving the second roll of each pair free to rotate under the frictional contact at the nip between the pairs of rolls, as shown in FIGURES 1 and 3.

The pair of rolls **21** and **22** which rotate in the direction which propels a sheet in the direction of the other pair of rolls, hereinafter termed "entrance rolls" are located toward the front of the apparatus and above the rearwardly portion of the reservoir **17** extending between the side plates **11** and **12**. They have end portions of their axles mounted in journals carried by those side plates and receive an edge of an image-bearing master to be treated with a prewetting solution. The other pair of rolls **23** and **24**, hereinafter termed "exit rolls," are located near the back of the apparatus, spaced rearwardly and above entrance rolls **21** and **22** and arranged parallel therewith. They are similarly carried in journals located in side plates **11** and **12**. Exit rolls **23** and **24** squeeze the excess treating solution off of the prewetted master sheet and deliver the treated master outside of the apparatus. The equal peripheral speed of these pairs of rolls permits the passage of a sheet between them with neither tension on the sheet which could tear the sheet nor a buckling of the sheet between them, when different parts of the sheet are in their different nips.

The nips between these pairs of rolls are located at somewhat different levels, to cause a sheet passing between them to travel along a generally slanting path which may be from about 10° to about 45° and preferably from about 15° to about 20° from the horizontal plane. The purpose of this slanting path of travel causes the aqueous treating solution to drain from the upper surface of a sheet passing along the path. In the specific embodiments of the apparatus described herein, the nip of the entrance pair of rolls is at a level lower than that of the nip of the exit pair of rolls. This arrangement is preferred since it tends to cause the leading edge of a sheet passing in a somewhat upwardly direction over the guide and bearing plate to stay in contact with that plate.

The spacing between the nips between the entrance and exit rolls may be merely long enough to allow for the convenient location of a scrubber roll **25** between the two pairs of rolls. In any event, it could be shorter than the length of the shortest photoelectrostatic master to be treated by the use of the apparatus. In general, it is desirable to make this spacing as short as will permit convenient access to the scrubber roll to keep the apparatus as compact as reasonably possible.

The guide and bearing plate **26** is located between these pairs of rolls and has a contour and has its upper surface located in a position between the nips of the entrance and exit pairs of rolls, such that the leading edge of a sheet leaving the nip between the entrance pair of rolls **21** and **22** will pass over the surface and be guided into the nip between the exit pair of rolls **23** and **24**. The upper surface of this guide and bearing plate **26** is desirably coated with a friction-reducing coating. The tetrafluoroethylene resin sold under the trademark of "Teflon" by E. I. du Pont de Nemours & Company, Inc. and the product sold under the trademark "Ore-A-Tape" by the Ore-Lube Corporation believed to be a dispersion of molybdenum or titanium disulfide in tetrafluoroethylene resin have been found suitable for use as antifriction layers on the upper surface of this guide and bearing plate.

The scrubber roll **25** having a resilient surface is located in a position above the guide and bearing plate **26** to place a lower segment of its surface in contact with an image-bearing photoelectrostatic master passing between the entrance rolls **21** and **22** and the exit rolls **23** and **24** and passing over the guide and bearing plate **26**. Scrubber roll **25** is rotatably mounted in a similar manner on journals carried by side plates **11** and **12** and positioned between entrance rolls **21** and **22** and exit rolls **23** and **24**. The axis of rotation of this scrubber roll **25** is parallel to those of the entrance and exit rolls and it is provided with a positive driving means to be subsequently described which rotates it at a peripheral surface speed in excess of the peripheral surface speed at which the entrance and exit rolls are driven. The higher peripheral surface speed of rotation is conveniently achieved by making this roll **25** larger in diameter than the diameters of the entrance and exit rolls and driving it at the same axial rotational speed as the entrance and exit rolls are driven.

The direction of rotation of this scrubber roll **25** along its lower segment, which contacts a sheet passing under it and in contact with that lower segment of its surface, is the same as the direction of travel of the sheet, but the speed with which the roll moves is higher than the speed with which the sheet moves, with the result that there is a relative movement between the contacting segment of the scrubbing roll **25** and the sheet passing in contact therewith which is in the direction of the forwardly travel of the sheet.

The scrubber roll **25** comprises a hollow or solid cylinder which carries on its cylindrical surface a layer of a synthetic sponge material. It is desirable to use a layer of the sponge material of substantial thickness to provide

adequate resiliency in its surface. A thickness of approximately one-eighth inch has been found to provide an adequately resilient surface. Any sponge material which is inert to the aqueous prewetting solution is suitable for this purpose. Polyurethane foam has been found to be particularly satisfactory. Natural and synthetic rubber foams and cellulosic foams may also be used for this purpose. The hollow or solid cylinder which carries the resilient surface material may be made of any waterproof or water-resistant structural material. It is desirable to construct this roll at minimal cost since it is desirable to replace it at periodic intervals when its resilient surface shows wear. It has been found that an inexpensive cylinder of waterproofed paper cardboard paper tubing is satisfactory for the purpose.

The portions of the axles of rolls **22**, **24** and **25** extending through left side plate **11** carry thereon pulleys **27** which are firmly fixed to the axles to prevent differential rotation. As shown particularly in FIGURE 1, a motor **28** is arranged to drive rolls **22**, **24**, and **25** by means of a V-belt drive **29** arranged in frictional contact with a driven pulley **30** and with pulleys **27** arranged on one end of the rolls. Rolls **21** and **22** and rolls **23** and **24** have tension members **31** holding together each respective set or pair of rolls and acting upon the portions of their axles extending outwardly through side plates **11** and **12** as shown in FIGURES 2 and 4. Tension members **31** comprise coil springs which are arranged to pass around the outwardly extending portions of the roll axles and have their ends secured in side plates **11** and **12** so as to draw the axles downwardly toward base plate **10** and to press the rolls together. The drive belt tension can be adjusted by a spring-mounted idler pulley **32**. A slightly different arrangement of idler pulley **32** is shown in FIGURE 6.

Holes **33** are provided in side plate **12** for initial insertion of rolls **21**, **22**, **23** and **24** into position in the apparatus. Slots **34** are provided extending generally downwardly from holes **33** and arranged to receive the through-extending portions of the roll axles. Tension members **31** are thus arranged to draw the rolls in each set together, and, furthermore, to draw each respective set of rolls generally downwardly toward the bottom of slots **34** so that the nip between the rolls will be positioned in a horizontal plane.

A tray **35** is located beneath the sets of rolls and beneath the guide and bearing plate **26** and is arranged to catch all of the aqueous prewetting solution draining through the roll system and to feed it along a slanting path downwardly into the reservoir **17**. Thus, the reservoir **17** for a prewetting solution is located at a level lower than the five rolls described hereinbefore and has a width at least equal to the length of the rolls.

Pump **19** is located beneath the tray on the right-hand side of the apparatus and is driven by the motor **18**. A conduit **36**, for example, a flexible plastic tube, connects reservoir **17** to pump **19**, which is, in turn, connected by a conduit **38** which may also be flexible plastic tube, to one end of a rigid tube or nozzle **39** which extends across the apparatus adjacent and parallel to the scrubber roll **25** in a location behind and at a somewhat higher level than that roll. The opposite end of this rigid tube or nozzle **39** is closed and it is perforated at regular intervals along the length of its lower periphery. The operation of the pump **19** withdraws prewettting solution from the reservoir **17** and causes it to spray downwardly through the perforations in the rigid tube **39**.

The pump **19** may be of a centrifugal type as shown in FIGURE 3 and is connected by conduit **36** to the bottom of reservoir **17** and in front of a filter **37** disposed therein in a manner separating the aqueous prewetting solution in reservoir **17** into two portions, one filtered and one unfiltered. Tray **35** slopes downwardly to provide good drainage into reservoir **17** behind filter **37** which extends across reservoir **17** in a location behind the orifice of the conduit **36** leading to pump **19**. By this arrangement, all aqueous prewetting solution which is returned to reservoir **17** from tray **35** must pass through filter **37** for the removal of any suspended solid material prior to entering flexible conduit **36** and advancing to pump **19**.

The exit end of pump **17** is connected by a flexible conduit **38**, a portion of which is shown schematically, leading to a nozzle **39** disposed near the top of the apparatus and between the scrubber roll **25** and exit rolls **23** and **24**. The nozzle **39** is arranged to spray aqueous prewetting solution toward the guide and bearing plate **26** between the upper exit roll **23** and scrubber roll **25** and all across the width of the apparatus. In the embodiments shown, it has been found desirable to use an elongate nozzle, **39**, which comprises a tube connected at one end to the flexible conduit **38** leading from the exit end of the pump **19** and being closed at the opposite end. The tube has a plurality of perforations along the length of its lower periphery which serve to direct sprays of aqueous prewetting solution in the desired direction and in the desired quantity.

This apparatus may be provided with either of two alternative forms of feeding racks located in front of the entrance rolls **21** and **22** in a position to guide a sheet into the nip between those rolls. One form of the rack, shown in FIGURES 1 and 3, has a carrier member **41** which is downwardly curved from front to rear and adapted to carry the sheet in an arcuate path of travel which takes the sheet downwardly into the prewetting solution contained in the reservoir **17** behind its filter **37** and then upwardly into the nip between the entrance rolls **21** and **22**. A second top member **42** which is likewise downwardly curved from front to rear located above the carrier member **41** in a position to assure that a sheet inserted into entrance slot **14** at the front of cabinet **13** and passed onto the carrier member **41** passes beneath the surface of and through the prewetting solution in the reservoir **17**. Carrier member **41** has openings therethrough and is preferably formed of a wire screen to allow access of prewetting solution contained within reservoir **17** into the chamber or space between carrier member **41** and top member **42**.

The alternative form of feed rack which may be located in front of the entrance rolls, as shown in FIGURES 6 and 7, comprises a carrier member **43** which is flat and is preferably positioned above reservoir **17** and on a slight downwardly slope towards the nip between entrance rolls **21** and **22**. When provided with this rack, the sheet being passed into the apparatus is not immersed in the prewetting solution prior to going into the nip between the entrance rolls.

The choice between these alternative feed racks is determined by the desirability of completely immersing the image-bearing photoelectrostatic master in the prewetting solution with which the apparatus is used. When using the alternative form of the rack which immerses the master in the prewetting solution contained in the reservoir, the entrance rolls squeeze the excess prewetting solution from both sides of the master.

Referring also to FIGURES 1 and 6, there is shown a liquid level indicator **45** extending along the right side of the reservoir **17** and arranged to operate a switch **46** which turns on a signal light **47** when the liquid level in reservoir **17** is undesirably low. A switch **48** is also mounted on control panel **49** with light **47** for operating the motor **18** and the pump **19** and the motor **28** for the drive. A fuse **50** is similarly mounted below switch **48**.

Referring now to FIGURE 5, there is shown an electrical system which may be used for controlling the operation of all of the embodiments illustrated. An input line **51** is connected by a wire **52** to one terminal **53** of one side **54** of a double pole, double throw switch **55**. The opposite terminal **56** of that side of the switch **55** is connected by line **57** to fuse **50**. The opposite end of fuse **50** is connected by wire **58** to one terminal **59** of motor

28 which drives the entrance rolls 21 and 22 and exit rolls 23 and 24 and the scrubber roll 25.

A second input line 60 is connected to one terminal 61 of the other side 62 of the switch 55 by means of a wire 63. The opposite terminal 64 of that side 62 of the switch 55 is connected by a line 65 to the other terminal 66 of the drive motor 28. Similarly, motor 18 which drives the circulating pump 19 has its terminals 67, 68 connected respectively to line 58 through connector 69 and to line 65 through connector 70. In a similar manner, the signal light 47 has one terminal connected to line 65 and the opposite terminal connected through a connector 71 to a switch 46 operably controlled by the float mechanism 45. Float mechanism 45 is arranged to close the switch 46 when the float level within reservoir 17 is abnormally low thereby causing the indicating light 47 to light up. The opposite terminal of switch 46 is connected through a connector 72 to line 58. A third incoming line 73 is connected to ground 74. The three incoming lines 51, 60, 73 may be connected to a suitable source of 110 volt, 60 cycle alternating current.

While the present invention and its objects and advantages have been described above, it will be apparent from the above that numerous changes may be made in specific embodiments thereof without departing from the spirit and scope of the invention.

What I claim is:

1. Apparatus adapted for the application of a prewetting solution to an image-bearing surface of a photoelectrostatic master sheet, which comprises

first and second sheet transfer means spaced apart from each other and adapted to advance a photoelectrostatic master sheet from an input position through a treating station and to an exit position,

a guide and bearing plate disposed between said first and second sheet transfer means and adapted to guide said sheet from said first sheet transfer means to said second sheet transfer means,

scrubber means disposed adjacent said guide and bearing plate and adapted to contact the surface of a photoelectrostatic master sheet passing over the sheet guide and bearing plate with relative motion between the surface of said photoelectrostatic master sheet and said scrubber means,

a reservoir for containing a prewetting solution,

an elongate nozzle directed toward said guide and bearing plate between said scrubber means and said second sheet transfer means and adapted to spray aqueous prewetting solution onto a portion of the said photoelectrostatic master sheet issuing from between said scrubber means and said guide and bearing plate, and

means for circulating aqueous prewetting solution from said reservoir and through said nozzle onto said photoelectrostatic master sheet and for returning said solution to said reservoir.

2. Apparatus according to claim 1, wherein said first and second sheet transfer means each comprise two rolls disposed substantially parallel and adjacent to one another to form a roll nip, at least one of said rolls being rotatably driven, and a drive means arranged to drive at least one of the rolls of said first and second sheet transfer means at substantially equal peripheral surface speeds.

3. Apparatus according to claim 2, wherein the nip of each respective set of rolls is spaced from that of the other set of rolls by a distance of less than the length of the shortest photoelectrostatic master sheet to be treated.

4. Apparatus according to claim 1, wherein said scrubber means comprise a rotatably mounted cylinder having a resilient surface, the axis of said cylinder being parallel to the plane of said photoelectrostatic master sheet and substantially perpendicular to the direction of travel of said sheet through said apparatus, and drive means adapted to rotate said cylinder so that its surface contacting said sheet moves in the same direction as said sheet and at a peripheral surface speed greater than the speed of the surface of said sheet.

5. Apparatus according to claim 4, wherein said cylinder carries on its cylindrical surface a layer of synthetic sponge material having substantial thickness and resiliency.

6. Apparatus according to claim 1, including a single drive means operably connected to each of said first and second sheet transfer means and said scrubber means.

7. Apparatus according to claim 1, wherein said aqueous prewetting solution circulating means comprise a filter to strain aqueous prewetting solution removed from said reservoir, a pump for drawing material from said reservoir through said filter and for advancing it under pressure, a conduit connecting the said pump to the said elongate nozzle, and a tray disposed beneath the said transfer means for catching excess aqueous prewetting solution and for transferring it to said reservoir.

8. Apparatus according to claim 1, wherein the surface of said guide and bearing plate which contacts said photoelectrostatic master sheet is coated with a friction-reducing material.

9. Apparatus according to claim 1, including sheet immersion means disposed adjacent said first transfer means and adapted to guide a sheet into and out of a body of aqueous prewetting solution prior to contact of said sheet by said scrubber means.

10. Apparatus for the application of an aqueous prewetting solution to an image-bearing surface of a photoelectrostatic master sheet which comprises;

an entrance pair of rolls,

means for driving at least one of the pair of entrance rolls,

an exit pair of rolls substantially parallel to and spaced apart from the said entrance pair of rolls,

means for driving at least one of the pair of exit rolls at a peripheral surface speed substantially the same as that at which the entrance pair of rolls is driven,

a guide and bearing plate of a contour and located in a position to guide the leading edge of a photoelectrostatic master sheet issuing from the nip between the entrance pair of rolls into the nip between the exit pair of rolls,

a scrubber roll having a resilient surface in a position above the said guide and bearing plate to place a lower segment of its surface in contact with the surface of a photoelectrostatic master sheet passing over the said guide and bearing plate,

a means for driving the said scrubber roll at a peripheral surface speed exceeding the peripheral surface speed at which the entrance and exit rolls are driven,

a reservoir for an aqueous prewetting solution at a level lower than the said rolls,

an elongate nozzle located parallel to and adjacent to the said scrubber roll having one closed end, an open end and a series of perforations along the length of its lower surface,

a conduit connecting the said reservoir to the open end of the said perforated elongated nozzle,

a means for circulating a liquid from the said reservoir to the said perforated elongate nozzle, and

a means located below the said rolls for returning a fluid sprayed from the said perforated elongate nozzle, to the said reservoir.

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