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Description

The invention relates to lithographic printing presses and more particularly concerns a roller driven fan for evaporating dampening fluid which infiltrates the ink train during the lithographic printing process.

BACKGROUND OF THE INVENTION

The inevitable infiltration by dampening fluid into the ink train system of lithographic printing presses is well known in the art. The presence of dampening fluid in the ink train adversely affects both image quality and color consistency. Previous attempts to eliminate dampening fluid from the ink train of lithographic printing presses have proved costly, complex, and generally involve elaborate plumbing networks which pipe air from air compressors, to air jet manifolds or nozzles which direct streams of air to impinge against inker rollers to evaporate excess dampening fluid. Typical systems are disclosed in U.S. Patent No. 4,524,689 entitled "DEHYDRATION APPARATUS FOR PRINTING PRESS INKING SYSTEM" and U.S. Patent No. 4,452,139 entitled "DAMPENING FLUID EVAPORATOR AND METHOD".

BE-A-534655 discloses a dampening fluid evaporator for a lithographic printing press comprising a blower having a longitudinal axis, means to mount the blower adjacent a roller in a lithographic printing press and drive means to rotate the fan to deliver air towards the surface of the roller to evaporate dampening fluid from the surface of the roller.

The use of air compressor units for delivering pressurized air to jet manifolds or nozzles within the printing press is expensive in terms of power consumption, floor space, and plumbing costs. Further, air bars and manifolds sometimes limit access to the rollers in the press. Since it is desirable to control such evaporative systems in conjunction with the operation of the ink train to prevent excessive drying of the rollers when the press is momentarily stopped or otherwise not applying ink to the printing plate through the inking rollers; compressors must be either manually turned off during periods of roller inactivity or the cost and complexity of the evaporative system must be increased further by the incorporation of automatic power or pneumatic relays.

SUMMARY OF THE INVENTION

A primary object of the invention is to provide a method and apparatus for easily and inexpensively evaporating excess dampening fluid from the ink train of a lithographic printing press.

According to the invention, there is provided a method of evaporating liquid from the surface of a roller that rotates about an axis in a lithographic printing press comprising the steps of:

(a) supporting an elongate impeller adjacent to a roller in a lithographic printing press such that the impeller extends longitudinally of substantially the entire length of a roller and such that the impeller extends generally parallel to the axis of the roller; and

(b) driving the impeller to draw and deliver air transversely of the roller while minimizing air flow in a direction parallel to the axis of the roller.

The invention further provides a dampening fluid evaporator adapted to be mounted to evaporate dampening fluid from a roller rotatable about a roller axis in a lithographic printing press comprising:

(a) an elongate impeller;

(b) means for rotatably mounting said elongate impeller adjacent a roller in a lithographic printing press such that the impeller extends longitudinally of substantially the entire length of a roller and such that said impeller extends generally parallel to the roller axis; and

(c) drive means to rotate said impeller to draw air transversely of said impeller, along substantially the entire length of the roller, and to deliver air toward the roller to evaporate dampening fluid from the roller.

BRIEF DESCRIPTION OF THE DRAWINGS

Drawings of a preferred embodiment of the invention are annexed hereto so that the invention may be better and more fully understood, in which:

Figure 1 is a schematic illustration of a lithographic printing press showing an end view of the dampening fluid evaporator assembly;

Figure 2 is a rear elevational view of the dampening fluid evaporator assembly;

Figure 3 is a top plan view of the dampening fluid evaporator assembly;

Figure 4 is a cross-sectional view taken along line 4-4 of Figure 3; and

Figure 5 is an enlarged cross-sectional view of a blade.

Numerical references are employed to designate like parts throughout the various figures of the drawing.

DESCRIPTION OF A PREFERRED EMBODIMENT

A dampening fluid evaporator, generally designated by the numeral 70, is illustrated in Figure 1 of the drawing to evaporate excess dampening fluid from rollers in an inker system generally des-

ignated by the numeral 20 in a printing press.

The printing press, generally designated by the numeral 10, is of conventional design and comprises a plate cylinder 12 having a printing lithographic plate 13 mounted on the surface thereof in rolling engagement with a blanket cylinder 14 rotatably supported between press side frames 15 and 16.

Inker 20 is of conventional design and comprises resilient surfaced inker form rollers 21, 22, 23 and 24 which apply ink and dampening fluid to the surface of lithographic printing plate 13. An equalizer roller 26 is in rolling engagement with the last ink form roller 24. Vibrator rollers 28, 30 and 32 oscillate longitudinally relative to form rollers 21, 22, 23 and 24 for distributing ink onto the surface of the rollers and to eliminate "ghosting".

Ink is delivered to vibrator rollers 28 and 30 over ink supply rollers 34 and 36. Ink supply roller 36 delivers ink to the surfaces of ink distributor rollers 38, 40, 42 and 45, as will be hereinafter more fully explained. An equalizing roller 33 is in rolling engagement with roller 35 which engages ink supply rollers 34 and 36 and receives ink from ink supply rollers 48 and 50. A ductor roller 52 oscillates between fountain roller 54 and ink supply roller 50. Fountain roller 54 is submerged in a supply of ink 56 in ink reservoir 55. Rollers 33 and 58 function as ink storage rollers engaging supply rollers 35 and 48 to equalize films and split films of ink carried by the surfaces of the rollers of the train of rollers in inker 20 enroute to the surface of printing plate 13. Inker 20 is a conventional design and may assume other and further configurations.

The dampener system generally designated by the numeral 60 is of conventional design and preferably is of the type disclosed in U.S. Patent No. 3,343,484 for forming a thin film of dampening fluid and applying the film to the first inker form roller 21. Dampener 60 generally comprises a hydrophilic transfer roller 62 in pressure indented relation with a resilient covered metering roller 64 which receives dampening fluid 66 from a reservoir 65. As metering roller 64 rotates, dampening fluid is carried on its surface to the nip between metering roller 64 and transfer roller 62. The surface speed of transfer roller 62 controls the rate at which a film of dampening fluid is offered to the surface of the first inker form roller 21. The dampening system 60 is of conventional design and may assume other and further configurations.

From the foregoing it should be readily apparent that ink from the ink reservoir 55 is delivered over a train of rollers in inker 20 and combined with a film of dampening fluid supplied by dampener 60 for application to the lithographic printing plate 13. The inker 20 and dampening system 60 form no part of the present invention except in combination

with the dampening fluid evaporator 70.

As is well known to persons skilled in the art, the film of dampening fluid formed by the dampening system 60 is applied to the surface of ink on the first inker form roller and dampens the hydrophilic non-image areas on the surface of printing plate 13 while ink is transferred to image areas on printing plate 13. Some of the dampening fluid applied to printing plate 13 is transferred to the subsequent form rollers 22, 23 and 24 while a portion of the film of dampening fluid which remains on the first form roller 21 is transferred over roller 30 to other rollers in the inking system 20.

Dampening fluid evaporator 70 is preferably mounted to evaporate excess dampening fluid from the surface of ink distribution roller 45 to prevent accumulation of excessive quantities of dampening fluid on the surfaces of the train of rollers in inker 20.

As best illustrated in Figures 1 and 3 of the drawing, ink distribution roller 45 has journals 44 and 46 formed on opposite ends thereof which are rotatably supported in bearings 17 and 18 on press sideframes 15 and 16. Suitable drive means 90 is provided to transfer driving force from ink distributor roller 45 to the dampening fluid evaporator 70.

In the illustrated embodiment, the drive means includes a pair of pulleys 92 and 96 and a flexible drive member 100. Pulley 92 is secured by a key 94 to journal 44 of ink distribution roller 45. Force is imparted to drive dampening fluid evaporator 70 by belt 100 which is positioned around pulley 92 and pulley 96 which is secured to tail shaft 75a of dampening fluid evaporator 70 by a key 98. Ink distribution roller 45 rotatively contacts vibrator roller 28 which is rotated and oscillated axially by a system of gears (not shown) within printing press 10. Ink distribution roller 45 is rotated in response to frictional forces imparted by the rotation of gear driven vibrator roller 28. It will of course be appreciated that dampening fluid evaporator 70 can alternately be driven by an electrical motor or by a gear system within the printing press 10 without departing from the scope of the invention as recited in the appended claims.

Referring now to Figures 2, 3 and 4 of the drawing, dampening fluid evaporator 70 comprises an elongated fan assembly in a housing 71 having end shrouds 72 and 73, tail shafts 75a and 75b, end bearings 76 and 77, and an impeller generally designated by the numeral 80.

The fan incorporated into the evaporator 70 is commercially available from Dayton Electric Manufacturing Co. of Chicago, Illinois and is generally referred to as a "Dayton" transflow blower Model 4C874. The blower is a single speed unit designed for beating, cooling, exhausting, ventilating and drying applications. The blowers are conventionally

driven by a shaded-pole motor with automatic-reset thermal protection. Dayton form 5S2814, which is incorporated herein by reference in its entirety, contains a description and specifications of the blower.

The transverse-flow fan illustrated in Figures 2-4 advantageously causes the air to pass through the blades 79 twice, entering substantially tangentially through the tip, passing across the impeller 80 and out the other side. The fan housing 71 is designed to provide the transverse flow of air. The end shrouds 72 and 73 have no inlet holes. It should be appreciated that since the fan impeller 80 does not depend upon flow of air in an axial direction, the blade length and tip diameter ratios are limited only by structural considerations. Thus, the impeller 80 having an outside diameter of approximately 63.5 mm (2.5 inches) and a length for example, 965,2 mm (38 inches) provides a substantially uniform flow of air along the length of the impeller 80.

Impeller 80 comprises spaced circular retaining end plates 81 and 84, stabilizing plates 82 and 83, and a plurality of fan blades 79, each fan blade 79 having a heel 85, a curved central body portion 86, and a tip 87.

As best shown in Figures 3 and 4 of the drawing, fan blades 79 are perpendicularly disposed relative to press side frames 15 and 16 and are secured between retaining plates 81 and 84 in circular fashion relative to retaining plates 81 and 84 such that fan blades 79 are symmetrically disposed at equidistant intervals along the periphery of retaining plates 81 and 84 forming a cylindrical impeller 80. Fan blades 79 are angularly disposed between retaining plates 81 and 84 such that as impeller 80 is rotated, the tip 87 of each fan blade 79 serves as a leading edge of the fan blades 79 and the heel 85 serves as a trailing edge of fan blade 79 relative to the direction of rotation. Fan blades 79 are provided with a shallow forward curved central body portion 86 which points both tip 87 and heel 85 in the direction of rotation of the impeller 80. Stabilizing plates 82 and 83 are positioned between and at equidistant intervals from retaining plates 81 and 84. Fan blades 79 extend longitudinally through corresponding slots (not shown) in stabilizing plates 82 and 83. Stabilizer plates 82 and 83 are essentially "washer shaped", having a circular configuration of equal diameter as retaining plates 81 and 84, substantially flat surfaces disposed perpendicularly to fan blades 79, and a central bore therethrough.

Retaining plates 81 and 84 are secured to shafts 75a and 75b which extend through bearings 76 and 77, respectively along a central axis 74 for permitting rotation of impeller 80 around central axis 74. End bearing 77 is secured to the end

shroud 73 of housing 71. End bearing 76 is secured to the end shroud 72 of housing 71. End shroud 72 has an aperture aligned with central axis 74 for permitting the tail shaft 75a extending through end bearing 76 to extend longitudinally through aperture 78 to the outside of housing 71. Pulley 96 is secured to tail shaft 75a by key 98.

As best shown in Figures 1, 3 and 4, housing 71 comprises a cover shield 101, and a directional member 104 positioned in spaced apart relation around impeller 80 and secured between end shrouds 72 and 73. Cover shield 101, directional member 104, and end shrouds 72 and 73 substantially enclose impeller 80 and cause air to be channeled through the openings therebetween, said openings serving as air intake vent 88 and blower port 93.

Cover shield 101 having a curved rear portion 108 and a substantially straight front portion 109 is axially positioned above and adjacent to impeller 80 such that the curved rear portion 108 is positioned in eccentric alignment around impeller 80 and the front portion 109 extends away from impeller 80 toward ink distribution roller 45 for channeling air from impeller 80 and directing air to impinge on ink distribution roller 45. The eccentric alignment of the curved rear portion 108 of cover shield 101 and impeller 80 forms a progressively expanding air acceleration chamber 59 between cover shield 101 and impeller 80 extending from the rear of impeller 80 and tapering outwardly to blower port 93.

Directional member 104 comprises an angular channel having an upper fin 105 and a lower fin 106 and is positioned between impeller 80 and ink distribution roller 45. Directional member 104 is perpendicularly aligned relative to side frames 15 and 16 and secured at its ends to end shrouds 72 and 73. Upper fin 105 of directional member 104 is aligned in parallel spaced apart relation to front portion 109 of cover shield 101, the space therebetween forming blower port 93 for directing air from impeller 80 to impinge against ink distribution roller 45. Lower fin 106 is angularly inclined relative to upper fin 105.

End shrouds 72 and 73 enclose the ends of evaporator 70, the lower portion of each having a pair of outwardly extending anchor lugs 61. Mounting plates 107 extend perpendicular relative to axis 74, spanning the distance between the corresponding anchor lugs 61 and secured to the bottom of evaporator 70 by means of bolts 99 extending through anchor lugs 61. Similarly, the curved portion 108 of cover shield 101 and lower fin 106 of directional member 104 are positioned on opposite sides of impeller 80, the space therebetween and beneath impeller 80 forming air intake vent 88.

U-clamps 67 and 68 are positioned around a tubular cross member 69 in printing press 10 and secured to evaporator 70 by means of bolts 99 extending through anchor lugs 61 and mounting plate 107 grippingly engaging tubular cross member 69 between clamps 67 and 68 and mounting plate 107 for securing evaporator 70 in printing press 10. Tubular cross member 69 is a convention structural component in printing press 10 and is disposed in perpendicular relation to side frames 15 and 16. It will of course be appreciated that evaporator 70 may be secured within printing press 10 in a variety of ways, (i.e., by brackets mounted on side frames 15 and 16) depending upon the structural configuration of the particular printing press 10.

As will be readily apparent from the description of the preferred embodiment heretofore discussed, rotation of impeller 80 draws air through air intake vent 88, passes air through an air acceleration chamber 59, and exhausts air through blower port 93 to impinge against ink distribution roller 45 for evaporating excess dampening fluid from the inking system 20 of printing press 10. The method and operation of the dampening fluid evaporator described and illustrated in conjunction with the drawing is believed to be readily understandable by those skilled in the art. Dampening fluid is evaporated from the surface of a roller 45 in inking system 20 by positioning an impeller 80 adjacent roller 45 and providing appropriate drive means 90 coupling roller 45 and impeller 80 such that the rotation of roller 45 imparts force to drive impeller 80 causing air to impinge against roller 45 for evaporating dampening fluid on the surface of roller 45. According to a preferred embodiment of the present invention, an impeller 80 is mounted in a printing press 10, parallel and adjacent to ink distribution roller 45 and driven by a flexible belt mounted around a drive pulley secured to roller 45, and a driven pulley secured to impeller 80.

Although a preferred embodiment of the invention has been described herein those skilled in the art will also appreciate that various substitutions and modifications may be made to the specific arrangement described without departing from the scope of the invention as recited in the appended claims.

Claims

1. A method of evaporating liquid from the surface of a roller (45) that rotates about an axis in a lithographic printing press comprising the steps of:
 - (a) supporting an elongate impeller (80) adjacent to a roller (45) in a lithographic printing press such that the impeller (80) ex-

tends longitudinally of substantially the entire length of a roller (45) and such that the impeller (80) extends generally parallel to the axis of the roller; and

(b) driving the impeller (80) to draw and deliver air transversely of the roller (45) while minimizing air flow in a direction parallel to the axis of the roller (45)

2. A method according to Claim 1, the step of supporting the elongate impeller (80) comprising the steps of:
 - (a) mounting an elongate blower housing (71) adjacent to a roller (45) in a lithographic printing press such that the elongate blower housing (71) is positioned longitudinally of substantially the entire length of the roller (45) and such that the blower housing (71) extends generally parallel to the axis of the roller (45); and
 - (b) supporting the impeller (80) in the elongate blower housing (71).
3. A method according to Claim 2, the step of mounting an elongate blower housing (71) adjacent to a roller (45) in a lithographic printing press comprising the step of:
 - securing the blower housing (71) to a frame (15 and 16) of the lithographic printing press.
4. A method according to any one of Claims 1 to 3, the step of driving the impeller (80) comprising:
 - coupling the impeller (80) to the roller (45) such that the roller (45) drives the impeller (80) and the speed of rotation of the impeller (80) changes when the speed of rotation of the roller (45) changes.
5. A method according to Claim 4, the step of coupling the impeller (80) to the roller (45) comprising the steps of:
 - (a) providing a drive pulley (92) to rotate with the roller (45);
 - (b) providing a driven pulley (96) to rotate with the impeller (80); and
 - (c) mounting a drive member (100) on the drive pulley (92) and the driven pulley (96) such that rotation of the roller (45) imparts force to drive the impeller (80) such that the speed of rotation of the impeller (80) changes when the speed of the rotation of the roller (45) changes.
6. A method according to any one of claims 1 to 5, the step of driving the impeller (80) comprising:

driving the impeller (80) with an electric motor.

7. A method according to any one of Claims 1 to 6, wherein the impeller (80) comprises:

(a) a plurality of blades (79), each of the blades having a tip (87) and a heel (85);
 (b) a pair of end shrouds (72 and 73); and
 (c) means for mounting the blades (79) between the end shrouds (72 and 73) such that the tip (87) of each blade (79) points in the direction of rotation and such that the heel (85) of each blade (79) is positioned circumferentially rearwardly of the blade tip (87) to form forwardly curved blades (79).

8. A method according to any one of Claims 1 to 6, the impeller (80) comprising:

(a) elongate blades (79) having ends positioned adjacent ends of said roller (45);
 (b) circular end plates (81 and 84) adjacent opposite ends of the elongate blades (79); and
 (c) stabilizing plates (82 and 83) secured between the blades (79) at spaced-apart locations between the end plates (81 and 84).

9. A dampening fluid evaporator adapted to be mounted to evaporate dampening fluid from a roller (45) rotatable about a roller axis in a lithographic printing press comprising:

(a) an elongate impeller (80);
 (b) means for rotatably mounting said elongate impeller (80) adjacent a roller in a lithographic printing press such that the impeller (80) extends longitudinally of substantially the entire length of a roller (45) and such that said impeller (80) extends generally parallel to the roller axis; and
 (c) drive means (90) to rotate said impeller (80) to draw air transversely of said impeller (80), along substantially the entire length of the roller (45), and to deliver air toward the roller (45) to evaporate dampening fluid from the roller (45).

10. A dampening fluid evaporator for a lithographic printing press according to Claim 9, said drive means (90) to rotate said impeller (80) comprising:

means (92, 96, 100) for coupling said impeller (80) to the roller (45) such that the roller (45) drives said impeller (80) and the speed of rotation of said impeller (80) changes when the speed of rotation of the roller (45) changes.

11. A dampening fluid evaporator for a lithographic printing press according to Claim 10, said means for coupling said impeller (80) to the roller (45) comprising:

(a) a drive member (92) operably connected to the roller (45) in the lithographic printing press;
 (b) a driven member (96) operably connected to said impeller (80); and
 (c) elongate flexible drive means (100) driven by said drive member (92) for imparting driving force to said driven member (96).

12. A dampening fluid evaporator for a lithographic printing press according to Claim 11, wherein said drive member and said driven member comprise pulleys (92 and 96); and wherein said elongate flexible drive means comprises a drive belt (100).

13. A dampening fluid evaporator for a lithographic printing press according to any one of Claims 9 to 12, said drive means to rotate said impeller (80) comprising:

an electric motor to rotate said impeller (80).

14. A dampening fluid evaporator for a lithographic printing press according to any one of Claims 9 to 13, said means for mounting said impeller (80) adjacent to a roller (45) in a lithographic printing press comprising:

(a) an elongate blower housing (71);
 (b) means for rotatably securing said impeller (80) to said blower housing (71); and
 (c) means for mounting said blower housing (71) adjacent a roller (45) in a lithographic printing press such that said blower housing (71) extends longitudinally of substantially the entire length of a roller (45) and such that said elongate blower housing (71) and the roller (45) are substantially parallel.

15. A dampening fluid evaporator for a lithographic printing press according to Claim 14, said elongate blower housing (71) comprising:

a body member having an elongate intake (88) opening and an elongate discharge opening (93) such that said impeller (80) draws air through said elongate intake opening (88) and delivers air through said elongate discharge opening (93) toward the surface of the roller (45).

16. A dampening fluid evaporator for a lithographic printing press according to Claim 14 or Claim 15, said means for mounting said blower hous-

ing (71) adjacent a roller (45) in a lithographic printing press comprising:

- (a) a mounting plate; and
- (b) means to secure said mounting plate to a frame (15 and 16) of the lithographic printing press relative to a roller (45) in the lithographic printing press.

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17. A dampening fluid evaporator for a lithographic printing press according to Claim 14 or Claim 15, said means for mounting said blower housing (71) adjacent a roller (45) in a lithographic printing press comprising:

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U-clamps (67 and 68) secured to said blower housing (71) to support said blower housing (71) between side frames (15 and 16) in the lithographic printing press.

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18. A dampening fluid evaporator for a lithographic printing press according to any one of Claims 9 to 17, said impeller (80) comprising:

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- (a) a plurality of blades (79), each of said blades having a tip (87) and a heel (85);
- (b) a pair of solid end shrouds (72 and 73); and
- (c) means for mounting said blades (79) between said end shrouds (72 and 73) such that the tip (87) of each blade (79) points in the direction of rotation and such that the heel (85) of each blade (79) is positioned circumferentially rearwardly of said blade tip (87) to form forwardly curved blades (79).

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19. A dampening fluid evaporator for a lithographic printing press according to any of Claims 9 to 17, said impeller (80) comprising:

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- (a) elongate blades (79);
- (b) circular end plates (81 and 84) adjacent opposite ends of said elongate blades (79); and
- (c) stabilizing plates (82 and 83) secured between said blades at spaced-apart locations between said end plates (81 and 84).

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Patentansprüche

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1. Verfahren zum Evaporieren einer Flüssigkeit von der Oberfläche einer Walze (45), welche um eine Achse in einer lithographischen Druckpresse rotiert, umfassend die Schritte:

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- a) Stützen eines länglichen Rotors (80) benachbart zu einer Walze (45) in einer lithographischen Druckpresse derart, daß sich der Rotor (80) longitudinal im wesentlichen über die gesamte Länge einer Walze (45) erstreckt, und daß sich der Rotor (80) generell parallel zu der Achse der Walze erstreckt; und

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b) Antreiben des Rotors (80) zum Ansaugen und Liefern von Luft quer zu der Walze (45), wobei der Luftfluß in einer Richtung parallel zu der Achse der Walze (45) minimiert wird.

2. Verfahren gemäß Anspruch 1, wobei der Schritt des Stützens des länglichen Rotors (80) die Schritte umfaßt:

a) Befestigen eines länglichen Lüftergehäuses (71) benachbart zu einer Walze (45) in einer lithographischen Druckpresse derart, daß das längliche Lüftergehäuse (71) longitudinal im wesentlichen über die gesamte Länge der Walze (45) angeordnet ist, und daß das Lüftergehäuse (71) sich generell parallel zu der Achse der Walze (45) erstreckt; und

b) Stützen des Rotors (80) in dem länglichen Lüftergehäuse (71).

3. Verfahren gemäß Anspruch 2, wobei der Schritt des Befestigens eines länglichen Lüftergehäuses (71) benachbart zu einer Walze (45) in einer lithographischen Druckpresse einen Schritt des Befestigens des Lüftergehäuses (71) an einem Rahmen (15, 16) der lithographischen Druckpresse umfaßt.

4. Verfahren gemäß einem der Ansprüche 1 bis 3, wobei der Schritt des Antreibens des Rotors (80) umfaßt: Koppeln des Rotors (80) mit der Walze (45) derart, daß die Walze (45) den Rotor (80) antreibt und daß sich die Drehzahl des Rotors (80) verändert, wenn sich die Drehzahl der Walze (45) verändert.

5. Verfahren gemäß Anspruch 4, wobei der Schritt des Koppelns des Rotors (80) mit der Walze (45) die Schritte umfaßt:

- a) Bereitstellen einer Antriebsrolle (92) zum Drehen mit der Walze (45);
- b) Bereitstellen einer angetriebenen Rolle (96) zum Drehen mit dem Rotor (80); und
- c) Befestigen eines Antriebsgliedes (100) auf der Antriebsrolle (92) und der angetriebenen Rolle (96) derart, daß die Rotation der Walze (45) Kraft zum Antreiben des Rotors (80) derart weitergibt, daß sich die Drehzahl des Rotors (80) verändert, wenn sich die Drehzahl der Walze (45) verändert.

6. Verfahren gemäß einem der Ansprüche 1 bis 5, wobei der Schritt des Antreibens des Rotors (80) umfaßt: Antreiben des Rotors (80) mit einem Elektromotor.

7. Verfahren gemäß einem der Ansprüche 1 bis 6, wobei der Rotor (80) umfaßt:

a) Eine Vielzahl von Blättern (79), wobei jedes der Blätter eine Spitze (87) und einen Absatz (85) aufweist;
 b) ein Paar von Endhauben (72, 73); und
 c) Einrichtungen zum Befestigen der Blätter (79) zwischen den Endhauben (72, 73) derart, daß die Spitze (87) eines jeden Blattes (79) in die Rotationsrichtung zeigt, und derart, daß der Absatz (85) eines jeden Blattes (79) umfänglich rückwärtig von der Blattspitze (87) angeordnet ist, zum Bilden vorwärts gekrümmter Blätter (79).

8. Verfahren gemäß einem der Ansprüche 1 bis 6, wobei der Rotor (80) umfaßt:

a) Längliche Blätter (79) mit Enden, welche benachbart zu den Enden der Walze (45) angeordnet sind;
 b) kreisförmige Endplatten (81, 84) benachbart zu gegenüberliegenden Enden der länglichen Blätter (79); und
 c) stabilisierende Platten (82, 83), welche zwischen den Blättern (79) befestigt sind, und zwar an beabstandeten Stellen zwischen den Endplatten (81, 84).

9. Feuchtfluidevaporator, angepaßt befestigt zu werden zum Evaporieren von Feuchtfluid von einer Walze (45), welche drehbar um eine Walzenachse in einer lithographischen Druckpresse ist, umfassend:

a) Einen länglichen Rotor (80);
 b) Einrichtungen zum drehbaren Befestigen des länglichen Rotors (80) benachbart zu einer Walze in einer lithographischen Druckpresse derart, daß der Rotor (80) sich longitudinal im wesentlichen über die gesamte Länge einer Walze (45) erstreckt und derart, daß der Rotor (80) sich generell parallel zu der Walzenachse erstreckt; und
 c) Antriebseinrichtungen (90) zum Rotieren des Rotors (80) zum Ansaugen von Luft quer zu dem Rotor (80) entlang im wesentlichen der gesamten Länge der Walze (45), und zum Liefern von Luft zu der Walze (45), zum Evaporieren von Feuchtfluid von der Walze (45).

10. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß Anspruch 9, wobei die Antriebseinrichtungen (90) zum Rotieren des Rotors (80) umfassen: Einrichtungen (92, 96, 100) zum Koppeln des Rotors (80) mit der Walze (45) derart, daß die Walze (45) den Rotor (80) antreibt und daß sich die Drehzahl des Rotors (80) verändert, wenn sich die Dreh-

zahl der Walze (45) verändert.

11. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß Anspruch 10, wobei die Mittel zum Koppeln des Rotors (80) mit der Walze (45) umfassen:

a) Ein Antriebsglied (92) operativ verbunden mit der Walze (45) in der lithographischen Druckpresse;
 b) ein angetriebenes Glied (96) operativ verbunden mit dem Rotor (80); und
 c) längliche, flexible Antriebseinrichtungen (100), welche durch das Antriebsglied (92) angetrieben werden, zum Weitergeben der Antriebskraft auf das angetriebene Glied (96).

12. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß Anspruch 11, wobei das Antriebsglied und das angetriebene Glied Rollen (92) und (96) umfassen; und worin die länglichen, flexiblen Antriebseinrichtungen einen Antriebsriemen (100) umfassen.

13. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß einem der Ansprüche 9 bis 12, wobei die Antriebseinrichtungen zum Rotieren des Rotors (80) umfassen: Einen Elektromotor zum Rotieren des Rotors (80).

14. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß einem der Ansprüche 9 bis 13, wobei die Einrichtungen zum Befestigen des Rotors (80) benachbart zu einer Walze (45) in einer lithographischen Druckpresse umfassen:

a) Ein längliches Lüftergehäuse (71);
 b) Einrichtungen zum drehbaren Sichern des Rotors (80) an dem Lüftergehäuse (71); und
 c) Einrichtungen zum Befestigen des Lüftergehäuses (71) benachbart zu einer Walze (45) in einer lithographischen Druckpresse derart, daß sich das Lüftergehäuse (71) longitudinal im wesentlichen über die gesamte Länge einer Walze (45) erstreckt, und daß das längliche Lüftergehäuse (71) und die Walze (45) im wesentlichen parallel sind.

15. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß Anspruch 14, wobei das längliche Lüftergehäuse (71) umfaßt: Ein Körperglied mit einer länglichen Aufnahmeöffnung (88) und einer länglichen Ausstoßöffnung (93) derart, daß der Rotor (80) Luft durch die längliche Aufnahmeöffnung (88) ansaugt und Luft durch die längliche Ausstoßöffnung (93) liefert, und zwar in Richtung der Oberfläche der Wal-

ze (45).

16. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß Anspruch 14 oder 15, wobei die Einrichtungen zum Befestigen des Lüftergehäuses (71) benachbart zu einer Walze (45) in einer lithographischen Druckpresse umfassen:
 - a) Eine Befestigungsplatte; und
 - b) Einrichtungen zum Sichern der Befestigungsplatte an einem Rahmen (15, 16) der lithographischen Druckpresse, und zwar relativ zu einer Walze (45) in der lithographischen Druckpresse.
17. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß Anspruch 14 oder 15, wobei die Einrichtungen zum Befestigen des Lüftergehäuses (71) benachbart zu einer Walze (45) in einer lithographischen Druckpresse umfassen: U-Klammern (67, 68), befestigt an dem Lüftergehäuse (71) zum Stützen des Lüftergehäuses (71) zwischen den Seitenrahmen (15, 16) in der lithographischen Druckpresse.
18. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß einem der Ansprüche 9 bis 17, wobei der Rotor (80) umfaßt:
 - a) Eine Vielzahl von Blättern (79), wobei jedes der Blätter eine Spitze (87) und einen Absatz (85) aufweist;
 - b) ein Paar von festen Endhauben (72, 73); und
 - c) Einrichtungen zum Befestigen der Blätter (79) zwischen den Endhauben (72, 73) derart, daß die Spitze (87) von jedem Blatt (79) in die Rotationsrichtung zeigt und daß der Absatz (85) eines jeden Blattes (79) umfänglich rückwärtig von der Blattspitze (87) angeordnet ist, zum Bilden vorwärts gekrümmter Blätter (79).
19. Feuchtfluidevaporator für eine lithographische Druckpresse gemäß einem der Ansprüche 9 bis 17, wobei der Rotor (80) umfaßt:
 - a) Längliche Blätter (79);
 - b) Kreisförmige Endplatten (81, 84), benachbart zu entgegengesetzten Enden der länglichen Blätter (79); und
 - c) Stabilisierende Platten (82, 83), gesichert zwischen den Blättern und an beabstandeten Stellen zwischen den Endplatten (81, 84).

Revendications

1. Procédé pour évaporer un liquide de la surface d'un rouleau (45) qui tourne autour d'un axe

dans une presse d'impression lithographique, comprenant les étapes consistant à:

- (a) supporter un rotor allongé (80) dans une position adjacente à un rouleau (45) dans une presse d'impression lithographique de telle sorte que le rotor (80) s'étende longitudinalement sur sensiblement toute la longueur d'un rouleau (45) et de telle sorte que le rotor (80) s'étende d'une manière générale parallèlement à l'axe du rouleau; et
 - (b) entraîner le rotor (80) pour aspirer et délivrer de l'air transversalement au rouleau (45), tout en réduisant à un minimum le débit d'air dans une direction parallèle à l'axe du rouleau (45).
2. Procédé selon la revendication 1, selon lequel l'étape consistant à supporter le rotor allongé (80) comprend les étapes consistant à:
 - (a) monter un carter allongé de ventilateur (71) dans une position adjacente à un rouleau (45) dans une presse d'impression lithographique de telle sorte que le carter allongé (71) du ventilateur soit disposé longitudinalement sur sensiblement toute la longueur du rouleau (45) et de telle sorte que le carter (71) du ventilateur s'étende d'une manière générale parallèlement à l'axe du rouleau (45); et
 - (b) supporter le rotor (80) dans le carter allongé (71) du ventilateur.
 3. Procédé selon la revendication 2, selon lequel l'étape de montage d'un carter allongé de ventilateur (71) dans une position adjacente à un rouleau (45) dans une presse d'impression lithographique comprend l'étape consistant à:
 - fixer le carter (71) du ventilateur à un bâti (15 et 16) de la presse d'impression lithographique.
 4. Procédé selon l'une quelconque des revendications 1 à 3, selon lequel l'étape d'entraînement du rotor (80) comprend:
 - l'accomplissement du rotor (80) au rouleau (45) de manière que le rouleau (45) entraîne le rotor (80) et que la vitesse de rotation du rotor (80) varie lorsque la vitesse de rotation du rouleau (45) varie.
 5. Procédé selon la revendication 4, selon lequel l'étape d'accouplement du rotor (80) au rouleau (45) comprend les étapes consistant à:
 - (a) se munir d'une poulie motrice (92) destinée à tourner avec le rouleau (45);
 - (b) se munir d'une poulie entraînée (96) destinée à tourner avec le rotor (80); et

- (c) montrer un élément d'entraînement (100) sur la poulie motrice (92) et sur la poulie entraînée (96) de telle sorte que la rotation du rouleau (45) communique une force servant à entraîner le rotor (80), de telle sorte que la vitesse de rotation du rotor (80) varie lorsque la vitesse de rotation du rouleau (45) varie. 5
6. Procédé selon l'une quelconque des revendications 1 à 5, selon lequel l'étape d'entraînement du rotor (80) comprend: 10
l'entraînement du rotor (80) à l'aide d'un moteur électrique. 15
7. Procédé selon l'une quelconque des revendications 1 à 6, selon lequel le rotor (80) comprend: 20
(a) une pluralité de pales (79), dont chacune possède une pointe (87) et un talon (85);
(b) un couple de coques d'extrémité (72 et 73); et
(c) des moyens pour monter les pales (79) entre les coques d'extrémité (72 et 73) de telle sorte que la pointe (87) de chaque pale (79) soit dirigée dans le sens de rotation et de telle sorte que le talon (85) de chaque pale (79) soit disposé circonférentiellement en arrière de la pointe (87) de la pale pour former des pales (79) incurvées vers l'avant. 25 30
8. Procédé selon l'une quelconque des revendications 1 à 6, selon lequel le rotor (80) comprend: 35
(a) des pales allongées (79) ayant des extrémités positionnées de manière à être adjacentes aux extrémités dudit rouleau (45);
(b) des plaques d'extrémité circulaires (81 et 84) situées dans des positions adjacentes aux extrémités opposées des pales allongées (79); et
(c) des plaques de stabilisation (82 et 83) fixées entre les pales (79), en des emplacements espacés entre les plaques d'extrémité (81 et 84). 40 45
9. Evaporateur de fluide d'humidification apte à être monté pour évaporer un fluide d'humidification d'un rouleau (45) pouvant tourner autour d'un axe dans une presse d'impression lithographique, comprenant: 50
(a) un rotor allongé (80);
(b) des moyens pour supporter en rotation ledit rotor allongé (80) dans une position adjacente à rouleau dans une presse d'impression lithographique de telle sorte que le rotor (80) s'étende longitudinalement sur sensiblement toute la longueur d'un rouleau (45) et de telle sorte que ledit rotor (80) s'étende d'une manière générale parallèlement à l'axe du rouleau; et
(c) des moyens d'entraînement (90) pour faire tourner ledit rotor (80) de manière à aspirer de l'air transversalement audit rotor (80), sur sensiblement toute la longueur du rouleau (45) et à envoyer de l'air en direction du rouleau (45) pour évaporer le fluide d'humidification du rouleau (45). 55
10. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon la revendication 9, dans lequel lesdits moyens d'entraînement (90) servant à faire tourner ledit rotor (80) comprennent: 60
des moyens (92, 96, 100) pour accoupler ledit rotor (80) au rouleau (45) de telle sorte que le rouleau (45) entraîne ledit rotor (80) et que la vitesse de rotation dudit rotor (80) varie lorsque la vitesse de rotation du rouleau (45) varie.
11. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon la revendication 10, dans lequel lesdits moyens pour accoupler ledit rotor (80) au rouleau (45) comprennent: 65
(a) un élément d'entraînement (92) raccordé de façon opérationnelle au rouleau (45) dans la presse d'impression lithographique;
(b) un élément entraîné (96) raccordé de façon opérationnelle audit rotor (80); et
(c) des moyens d'entraînement allongés et flexibles (100) entraînés par ledit élément d'entraînement (92) pour communiquer une force d'entraînement audit élément entraîné (96). 70
12. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon la revendication 11, dans lequel ledit élément d'entraînement et ledit élément entraîné comprennent des poulies (92 et 96); et dans lequel lesdits moyens d'entraînement allongés et flexibles comprennent une courroie d'entraînement (100). 75
13. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon l'une quelconque des revendications 9 à 12, lesdits moyens d'entraînement servant à entraîner en rotation ledit rotor (80) comprenant: 80
un moteur électrique pour faire tourner ledit rotor (80).
14. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon l'une 85

quelconque des revendications 9 à 13, dans lequel lesdits moyens pour supporter ledit rotor (80) dans une position adjacente à un rouleau (45) dans une presse d'impression lithographique comprennent:

- (a) un carter allongé de ventilateur (71);
- (b) des moyens pour fixer, avec possibilité de rotation, ledit rotor (80) sur ledit carter (71) du ventilateur; et
- (c) des moyens pour supporter ledit carter (71) du ventilateur en position adjacente à un rouleau (45) dans une presse d'impression lithographique de telle sorte que ledit carter (71) du ventilateur s'étende longitudinalement sur sensiblement toute la longueur d'un rouleau (45) et de telle sorte que ledit carter allongé (71) du ventilateur et le rouleau (45) soient sensiblement parallèles.

15. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon la revendication 14, dans lequel ledit carter allongé (71) du ventilateur comprend:

un élément de corps possédant une ouverture allongée d'admission (88) et une ouverture allongée de refoulement (93) de telle sorte que ledit rotor (80) aspire de l'air à travers ladite ouverture allongée d'admission (88) et envoie de l'air à travers ladite ouverture allongée de refoulement (93) en direction de la surface du rouleau (45).

16. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon la revendication 14 ou la revendication 15, dans lequel lesdits moyens pour supporter ledit carter (71) du ventilateur dans une position adjacente à un rouleau (45) dans une presse d'impression lithographique comprennent:

- (a) une plaque de montage; et
- (b) des moyens pour fixer ladite plaque de montage à un bâti (15 et 16) de la presse d'impression lithographique par rapport à un rouleau (45) situé dans la presse d'impression lithographique.

17. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon la revendication 14 ou la revendication 15, dans lequel lesdits moyens pour supporter ledit carter (71) du ventilateur en position adjacente à un rouleau (45) dans une presse d'impression lithographique comprennent:

des éléments de serrage en forme de U (67 et 68) fixés audit carter (71) du ventilateur pour supporter ledit carter (71) du ventilateur entre des bâtis latéraux (15 et 16) situés dans la presse d'impression lithographique.

18. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon l'une quelconque des revendications 9 à 17, dans lequel ledit rotor (80) comprend:

- (a) une pluralité de pales (79), dont chacune possède une pointe (87) et un talon (85);
- (b) un couple de coques d'extrémité pleines (72 et 73); et
- (c) des moyens pour monter lesdites pales (79) entre lesdites coques d'extrémité (72 et 73) de telle sorte que la pointe (87) de chaque pale (79) soit dirigée dans le sens de rotation et de telle sorte que le talon (85) de chaque pale (79) soit disposé circonférentiellement en arrière de ladite pointe (87) de la pale pour former des pales (79) incurvées vers l'avant.

19. Evaporateur de fluide d'humidification pour une presse d'impression lithographique selon l'une quelconque des revendications 9 à 17, dans lequel ledit rotor (80) comprend

- (a) des pales allongées (79);
- (b) des plaques d'extrémité circulaires (81 et 84) situées dans des positions adjacentes à des extrémités opposées desdites pales allongées (79); et
- (c) des plaques de stabilisation (82 et 83) fixées entre lesdites pales en des emplacements espacés entre lesdites plaques d'extrémité (81 et 84).





