Claims

~~What is claimed is:~~

1. An apparatus comprising:

a roll being configured to be rotatable about an axis thereof;

one or more micro-contact printing stamps on an outer surface of the roll, the one or more micro-contact printing stamps being arranged in a down-web direction on the circumference of the roll with a seam between each adjacent transverse edge of the one or more micro-contact printing stamps; and

a web path along which a web is guided such that the web contacts the outer surface of the roll along a transverse contacting line and rotates the roll,

wherein when the transverse contacting line runs across the seam, the transverse contacting line also runs across at least a portion of the one or more micro-contact printing stamps such that the web always contacts the one or more micro-contact printing stamps.

2. The apparatus of claim 1, wherein the adjacent transverse edges of the one or more micro-contact printing stamps have curved shapes that are complementary with each other.

3. The apparatus of claim 2, wherein the adjacent transverse edges have a chevron shape.

4. The apparatus of claim 3, wherein the chevron shape has a depth D in the down-web direction, the seam has a width W in the down-web direction, and the ratio of D/W is no less than 1.

5. The apparatus of claim 1, wherein the transverse contacting line has ~~first~~ one or more first sections in contact with the micro-contact printing stamps, and ~~second~~ one or more second sections covers the seam, and the length ratio of the first sections and the second sections is no less than 5.

6. The apparatus of claim 1, wherein the roll further comprises a sleeve on the outer surface.

Claims

1. An apparatus comprising:

a roll being configured to be rotatable about an axis thereof;

one or more micro-contact printing stamps on an outer surface of the roll, the one or more micro-contact printing stamps being arranged in a down-web direction on the circumference of the roll with a seam between each adjacent transverse edge of the one or more micro-contact printing stamps; and

a web path along which a web is guided such that the web contacts the outer surface of the roll along a transverse contacting line and rotates the roll,

wherein when the transverse contacting line runs across the seam, the transverse contacting line also runs across at least a portion of the one or more micro-contact printing stamps such that the web always contacts the one or more micro-contact printing stamps.

2. The apparatus of claim 1, wherein the adjacent transverse edges of the one or more micro-contact printing stamps have curved shapes that are complementary with each other.

3. The apparatus of claim 2, wherein the adjacent transverse edges have a chevron shape.

4. The apparatus of claim 3, wherein the chevron shape has a depth D in the down-web direction, the seam has a width W in the down-web direction, and the ratio of D/W is no less than 1.

5. The apparatus of claim 1, wherein the transverse contacting line has one or more first sections in contact with the micro-contact printing stamps, and one or more second sections covers the seam, and the length ratio of the first sections and the second sections is no less than 5.

6. The apparatus of claim 1, wherein the roll further comprises a sleeve on the outer surface.