

1 INKJET PRINTING MODES TO OPTIMIZE IMAGE-ELEMENT EDGES
2 FOR BEST PRINTING QUALITY

3 This Sheet Has Been Replaced



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5 ABSTRACT OF THE DISCLOSURE

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7 Inkjet-printed images (characters or graphics) have
8 an image-quality asymmetry, correlated with the direction
9 of pen scanning. The invention exploits this asymmetry to
10 improve apparent overall quality by forcing the less-per-
11 fect side of each image element to become, and be hidden
12 in, the element interior. To achieve this effect, part of
13 each element is printed during pen scanning in one direc-
14 tion and part during scanning in an opposite direction.
15 Neither scan prints the trailing edge -- that is, the edge
16 the pen reaches last, when moving in a given direction.
17 Instead each scan prints only the leading edge -- plus the
18 interior or part of the interior, if the image is wide
19 enough that its interior forms an analytically separate
20 portion. If the image is wider still, it is subdivided so
21 that one discrete interior portion is printed in the same
22 scan with one of the lateral edges (the leading edge in
23 one scan direction) and an additional discrete interior
24 portion is printed in the same scan with the other lateral
25 edge (the leading edge in the opposite scan direction).
26 The widths of the "leading edge" and also of top and bot-
27 tom edges are defined to optimize print quality by finding
28 the best tradeoff between oppositely acting surface-ten-
29 sion effects: when very wide portions are printed all at
30 once, creating a large pool of liquid ink, objectionable
31 "runners" occur (which effect favors defining the "edges"
32 as narrow); but when only very narrow portions are print-
33 ed, edges objectionably reveal the pixel structure con-
34 spicuously (which favors defining the "edges" as wide).
35 Overlap dots can be included in the portion or portions
36 printed when scanning in either or both directions, to
37 avoid narrow unprinted gaps in case of misalignment be-
38 tween scans in opposite directions.

(Fig. 4)