

Title (en)  
LIQUID DEVELOPER CHARGE DIRECTOR CONTROL.

Title (de)  
REGULIERUNG DES LASTVERTEILERS EINES FLÜSSIGEN ENTWICKLERS.

Title (fr)  
REGULATION DU REPARTITEUR DE CHARGE DANS UN REVELATEUR LIQUIDE.

Publication  
**EP 0259448 A4 19880704 (EN)**

Application  
**EP 87901903 A 19870213**

Priority  
US 82961886 A 19860214

Abstract (en)  
[origin: WO8705128A1] A copier wherein charge director (16) is supplied to a liquid developer (10) in response to a conductivity measurement thereof. The toner concentrate (14) is deficient in charge director and is supplied to the liquid developer in response to an optical transmissivity measurement thereof. Conductivity is measured by a pair of spaced electrodes (70, 71) immersed in the developer and excited by a variable alternating voltage source through a fixed resistor (74). The effects of inherent capacitance between electrodes are neutralized by a variable capacitor (72). A phase sensitive detector is provided with a reference voltage having the same phase shift as occasioned by capacitive effects. The copier is disabled if developer conductivity decreases appreciably below the desired value or if the developer temperature becomes excessive. The developer conductivity measurement is corrected by a developer temperature measurement. The control system solves the problems of faint images and formation of sludge deposits due to excessive or insufficient levels of charge director.

IPC 1-7  
**G03G 15/10**

IPC 8 full level  
**G03G 15/00** (2006.01); **G03G 15/10** (2006.01); **G03G 15/11** (2006.01); **G03G 21/00** (2006.01); **G03G 21/14** (2006.01)

CPC (source: EP KR)  
**G03G 15/10** (2013.01 - KR); **G03G 15/104** (2013.01 - EP); **G03G 15/105** (2013.01 - EP)

Citation (search report)  
• [A] US 3233781 A 19660208 - GRUBBS WILLIAM J  
• [A] US 4370053 A 19830125 - HIRAYAMA KAZUHIRO [JP], et al  
• [A] PATENT ABSTRACTS OF JAPAN, vol. 4, no. 156 (P-34)[638], 31st October 1980; & JP-A-55 103 570 (CANON K.K.) 07-08-1980  
• See references of WO 8705128A1

Designated contracting state (EPC)  
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**WO 8705128 A1 19870827**; AU 7083687 A 19870909; CA 1281763 C 19910319; DE 3788833 D1 19940303; DE 3788833 T2 19940511; DK 534487 A 19871209; DK 534487 D0 19871013; EP 0259448 A1 19880316; EP 0259448 A4 19880704; EP 0259448 B1 19940119; HK 179395 A 19951201; JP H0830921 B2 19960327; JP S63502855 A 19881020; KR 880700955 A 19880413; KR 950011878 B1 19951011

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**US 8700351 W 19870213**; AU 7083687 A 19870213; CA 529691 A 19870213; DE 3788833 T 19870213; DK 534487 A 19871013; EP 87901903 A 19870213; HK 179395 A 19951123; JP 50143187 A 19870213; KR 870700925 A 19871014