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(54) **Conditioning roller and method of operation for use with a photoconductive drum in an electrophotographic color printer.**

(57) Liquid toner conditioning apparatus and method for use in an electrophotographic color printer and including a stabilizing roller (76) (Figure 3) positioned adjacent to the surface of a photoconductive drum (10) and operative for transforming discrete color toner particles on the surface of the drum (10) into a stabilized unitary polymeric film structure which may be directly transferred onto an adjacent print medium. Advantageously, the stabilizing roller (76) comprises a deformable roller member including a soft open cell conductive foam (78), such as a wettable polyurethane foam which is disposed on a biased slip ring (80). The bias slip ring (80) is in turn formed on the outer surface of a central motor driven metal roller core member (82), and a suitable DC bias connection (86, 88) is applied to the slip ring. The applied DC bias voltage (88) has the same polarity as the desired charge on the toner and of an opposite polarity to the counter ions within the isopar

carrier fluid for transporting the toner on the surface of the photoconductive drum (10). Therefore, when the conductive deformable conditioning roller (76) is rotatably driven (48, 50) against the surface of the photoconductive drum (10), it provides three (3) critically important functions. First, it absorbs isopar fluid from the surface of the photoconductive drum (10) which reduces isopar carry out on the media (30). Secondly, it compresses the toner image electrostatically on the drum (10) to preserve its fidelity inasmuch as the polarity of the applied DC bias (88) repels the like charged toner ions into the surface of the photoconductive drum. Thirdly, the DC bias (88) applied to the slip ring (80) pulls counter ions in the isopar fluid from the surface of the drum (10) to thereby leave a desirable positive net charge on the toner as it proceeds to the print media (30).

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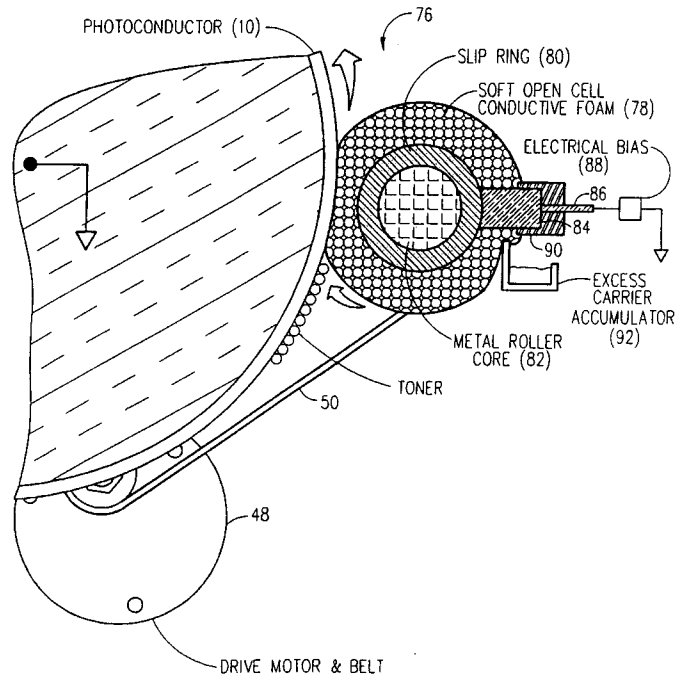


FIG. 3.



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## EUROPEAN SEARCH REPORT

Application Number

EP 92 10 8240

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	WO-A-9 004 216 (SPECTRUM SCIENCES)  * abstract * * page 15, line 11 - page 16, line 3 * * page 21, column 10 - column 17; claims 1-2; figures 1,5 * ---	1,6,9, 12-14,17	G03G15/01 G03G15/16
A	US-A-4 985 733 (KURTORI ET AL.)  * abstract * * column 5, line 16 - line 39 * * column 10, line 28 - line 61; figures 3,8,9 * ---	1,3,5-7, 10-12, 14,18	
A	WO-A-9 008 984 (SPECTRUM SCIENCES)  * abstract * * page 1, line 6 - line 33 * * page 21, line 34 - page 23, line 17 * * page 25, line 36 - page 27, line 15; figures 1,3 * ---	1,6,17	
A	GB-A-1 142 315 (RITZERFELD) * claims 1,8,11 *  -----	13,14,17	TECHNICAL FIELDS SEARCHED (Int. Cl.5)  G03G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 MARCH 1993	Examiner GREISER N.
<b>CATEGORY OF CITED DOCUMENTS</b>  X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document  T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			