

12 **EUROPEAN PATENT APPLICATION**

21 Application number: 86104112.7

51 Int. Cl.⁴: **B 41 J 3/04**

22 Date of filing: 04.02.82

30 Priority: 04.02.81 US 231326

43 Date of publication of application:
01.10.86 Bulletin 86/40

88 Date of deferred publication of search report: 08.04.87

84 Designated Contracting States:
AT BE CH DE FR IT LI LU NL SE

60 Publication number of the earlier application
in accordance with Art. 76 EPC: 0 057 472

71 Applicant: Burlington Industries, Inc.
3330 West Friendly Avenue
Greensboro North Carolina 27420(US)

72 Inventor: Gamblin, Roger Lotis
1506 Shroyer Road
Dayton Ohio 45419(US)

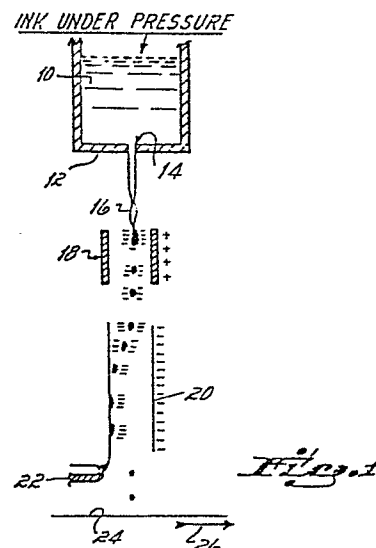
74 Representative: UEXKÜLL & STOLBERG Patentanwälte
Beselerstrasse 4
D-2000 Hamburg 52(DE)

54 **Random droplet liquid jet apparatus and process.**

57 Fluid or liquid jet marking apparatus and process wherein the treating fluid or liquid (10) is in the form of ink, dyestuff or other printing, marking or colouring medium, is delivered under pressure to an array of jet orifices (14) from which the medium issues continuously as streams (16) that break randomly into discrete droplets in flight. The moving random droplets are selectively charged as they pass through a selectively energizable electrostatic field (18). The paths of charged droplets are controlled by a deflection means (20) which establishes a second electrostatic field through which the droplets pass. Depending on whether the droplets are charged, they are either caught by a collector (22), or impinge on a receiving substrate (24) such as a textile, paper or any other desired medium, product or substance.

In the apparatus, the streams (16) break up randomly into droplets. Since the apparatus is not provided with a separate stimulator, vibrator or perturbation device, the orifice plate (12) can have virtually an unlimited cross-machine length. It has been found that by controlling certain equipment parameters, such random droplet breakup can occur within a narrow distribution around a mean droplet size to produce results very much the same as with perturbed systems that use separate, regularly cyclical varicosity inducing means, and in many cases are superior to perturbed systems in a large variety of applications as the length of the orifice plate (12) is not limited in size. The undesirable effects of droplets

to droplet size and spacing variation become narrowed with increased pressure on the fluid or liquid supply and decreased diameter of the jet orifices (14).





EP 86 10 4112

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. 4)
X	US-A-3 798 656 (P. LOWY et al.) * column 1, lines 17-24 *	1	B 41 J 3/04
A	GB-A-1 095 685 (PAILLARD S.A.) * claim 3 *		
A	US-A-3 656 171 (J.A. ROBERTSON) * abstract; figure 1 *	1	
A	DE-B-2 154 472 (CASIO COMPUTER CO.) * column 1 *		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			B 41 J 3/04
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
BERLIN		11-12-1986	BREUSING J
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
Y : particularly relevant if combined with another document of the same category		E : earlier patent document, but published on, or after the filing date	
A : technological background		D : document cited in the application	
O : non-written disclosure		L : document cited for other reasons	
P : intermediate document		& : member of the same patent family, corresponding document	

