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(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 coloring 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 droplet 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).

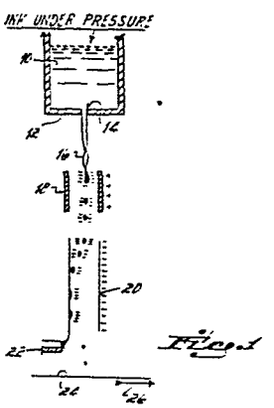

Fig. 1

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EUROPEAN SEARCH REPORT

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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. ³)
X	US-A-3 798 656 (P. LOWY et al.) * Column 1, lines 17-24 *	1	B 41 J 3/04
A	GB-A-1 095 689 (PAILLARD S.A.) * Complete document *		
A	DE-B-2 154 472 (CASIO COMPUTER CO.) * Column 1 *		

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

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	16-05-1983	ZOPF K

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
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E : earlier patent document, but published on, or after the filing date
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