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(54) A modular, fault tolerant liquid ink print head

(57) A print head assembly has a plurality of monolithic print head modules wherein nozzles are etched through a silicon chip substrate, at the bottom of ink channel pits which are etched part way through the substrate. The ink channel pits are staggered to maintain the strength of the substrate. The outline of each module follows the staggered array of ink channel pits at the ends of its chip. The staggering at one end of the chip is the complement of the staggering at the opposite end of the chip, allowing two module chips to be butted

together. This allows the arrangement and spacing of nozzles in joiner regions between print head modules to be identical to nozzles in other regions of the print heads.

The preferred manufacturing process uses anisotropic etching on a <100> single crystal silicon wafer to form ink channels and nozzle barrels, and simultaneously to separate the chips from the wafer.

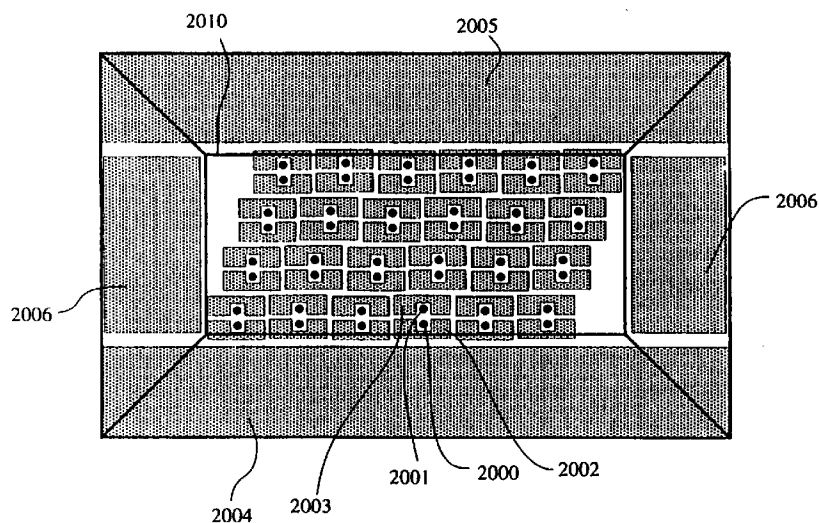


Fig. 7



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 11 6118

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.6)
A	EP 0 666 174 A (HEWLETT-PACKARD COMPANY) * the whole document * ---	1-3	B41J2/155
A	EP 0 340 960 A (AM INTERNATIONAL INCORPORATED) * the whole document * ---	1,5	
A	EP 0 339 926 A (AM INTERNATIONAL INCORPORATED) * the whole document * -----	1,5	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B41J
Place of search	Date of completion of the search	Examiner	
THE HAGUE	1 September 1997	Meulemans, J-P	
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 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			

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