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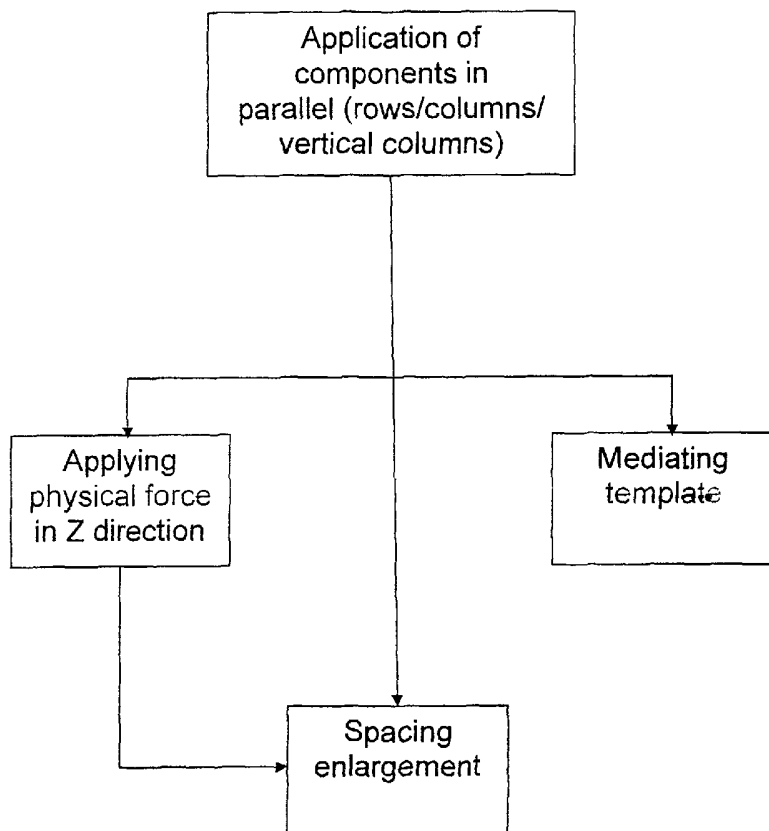
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(54) Title: APPARATUS AND METHOD FOR ASSEMBLING ARRAYS OF FUNCTIONAL ELEMENTS TO SUBSTRATES



(57) Abstract: Method for handling microstructures, which comprises arranging them into one-dimensional, two-dimensional or three-dimensional arrays, and displacing them as such. The one-dimensional arrays are constituted by lines which may be straight or curved or constituted of different connected sections and the two-dimensional arrays are constituted by matrices. The microstructures may be liquid crystal display pixels; light-emitting diode display pixels; organic light emitting diode pixels; solar cell elements; electromagnetic signal detectors; plasma display pixels; integrated circuits. They can also be generated in wafers at regular distances from one another so as to form a matrix. The part itself could be shaped in the special form in order to fit the holes of a support or substrate to which they are to be connected.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HOHMANN A FARNKOPF L: "CHIP PARALLEL INSERTION AUTOMAT" MOTOROLA TECHNICAL DEVELOPMENTS, MOTOROLA INC. SCHAUMBURG, ILLINOIS, US, vol. 39, September 1999 (1999-09), pages 193-194, XP000930968 ISSN: 0887-5286	13471012
A	the whole document	14,22
X	DE 196 25 515 A (MCI COMPUTER GMBH) 2 January 1998 (1998-01-02)	1-4, 7-10, 12-14,23 19,20
A	the whole document	
X	US 4 212 102 A (DRINKARD JOHN H JR) 15 July 1980 (1980-07-15)	12347
A	abstract; figures	11,12
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- *Z* document member of the same patent family

Date of the actual completion of the international search

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	US 6 557 247 B1 (LOWE JOHN MICHAEL) 6 May 2003 (2003-05-06) the whole document -----	1-4, 7-10, 23

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/IL 03/00821

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 19625515	A	02-01-1998	DE 19625515 A1	02-01-1998
US 4212102	A	15-07-1980	NONE	
US 6557247	B1	06-05-2003	GB 2333904 A	04-08-1999
			AT 224131 T	15-09-2002
			AU 741235 B2	29-11-2001
			AU 2290699 A	16-08-1999
			BR 9908708 A	05-12-2000
			CA 2318153 A1	05-08-1999
			DE 69902882 D1	17-10-2002
			DE 69902882 T2	30-04-2003
			DK 1051893 T3	14-10-2002
			EP 1051893 A1	15-11-2000
			ES 2184410 T3	01-04-2003
			WO 9939559 A1	05-08-1999
			HK 1032709 A1	24-01-2003
			JP 2002502136 T	22-01-2002
			PT 1051893 T	31-01-2003
			RU 2218682 C2	10-12-2003