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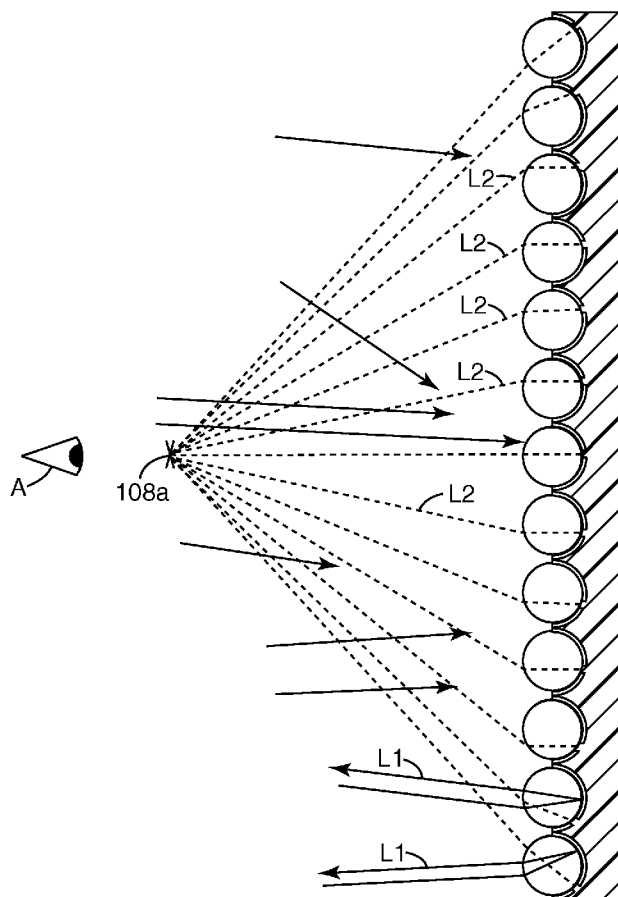
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(54) Title: SHEETING WITH COMPOSITE IMAGE THAT FLOATS



(57) Abstract: Translucent, transparent, or semi-translucent microlens sheetings with composite images are disclosed, in which a composite image floats above or below the sheeting, or both. The composite image may be two-dimensional or three-dimensional. The sheeting may have at least one layer of material having a surface of microlenses that form one or more images at positions internal to the layer of material, at least one of the images being a partially complete image. Additional layers, such as retroreflective, translucent, transparent, or optical structure layers may also be incorporated into the sheeting.

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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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A. CLASSIFICATION OF SUBJECT MATTER <i>G02B 5/128(2006.01)i</i> 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) IPC 8 G02B Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean Utility Models and applications for Utility Models since 1975 : IPC as above Japanese Utility Models and applications for Utility Models since 1975 : IPC as above Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKIPASS (KIPO internal) "Keywords : retroreflective, sheet, float, image, lens, radiation and similar terms"				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X A	WO 01/63341 A1 (3M INNOVATIVE PROPERTIES CO.) 30 Aug. 2001 See the whole document	1-6, 8-16 7, 17-20		
A	US 4082426 A (BROWN, ROBERT A.) 04 Apr. 1978 See column 2, line 39 - column 3, line 27 & figures 1, 2	1		
A	US 4200875 A (GALANOS, DEMOSTHENES G.) 29 Apr. 1980 See column 2, line 58 - column 4, line 55 & figures 1-4	1		
A	EP 0583776 A2 (MILES INC.) 23 Feb. 1994 See column 2, line 37 - column 3, line 54 & figures 1, 2	1		
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex. </div>				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; vertical-align: top;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>			
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/US2007/065751

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 01/63341 A1	30.08.2001	AR 031555 A1	24.09.2003
		AU 2000256271 B2	03.09.2001
		BR 200017132 A	05.11.2002
		CA 2400894 A1	30.08.2001
		CN 1452726 A	29.10.2003
		EP 01259851 A1	27.11.2002
		HU 200301412 AB	29.09.2003
		IL 151304 A0	10.04.2003
		JP 2003524205 A	12.08.2003
		KR 1020020086566 A	18.11.2002
		MX PA02008143 A	28.01.2003
		NZ 520890 A	29.04.2003
		PL 356536 A1	28.06.2004
		RU 2273038 C2	27.03.2006
		SK 200201217 A5	09.01.2003
		TW 522257 B	01.03.2003
		TW 522257 A	01.03.2003
		US 6288842 B1	11.09.2001
		US 2002054434 A1	09.05.2002
		US 2006262411 A1	23.11.2006
		US 6288842 B1	11.09.2001
		US 7068434 B2	27.06.2006
		ZA 200206714 A	21.02.2003
US 4082426 A	04.04.1978	AU 499946 B1	03.05.1979
		CA 1070282 A1	22.01.1980
		DE 2753253 A1	01.06.1978
		DE 2753253 C3	27.09.1979
		DK 144545 C	06.09.1982
		DK 519777 A	27.05.1978
		FR 2372447 A1	23.06.1978
		FR 2372447 B1	16.05.1980
		GB 1584208 A	11.02.1981
		IT 1091000 A	26.06.1985
		JP 53068596 A	19.06.1978
		JP 56046123 B2	31.10.1981
		NL 176977 C	01.07.1985
		NL 7712896 A	30.05.1978
		SE 422248 C	03.06.1982
		SE 7713220 A	27.05.1978
		US 4082426 A	04.04.1978
		ZA 7707026 A	27.09.1978
US 4200875 A	29.04.1980	None	
EP 0583776 A2	23.02.1994	DE 69322914 T2	29.07.1999
		EP 0583776 B1	07.01.1999
		EP 0583776 A3	10.04.1996
		JP 07038755 A	07.02.1995
		US 5774229 A	30.06.1998