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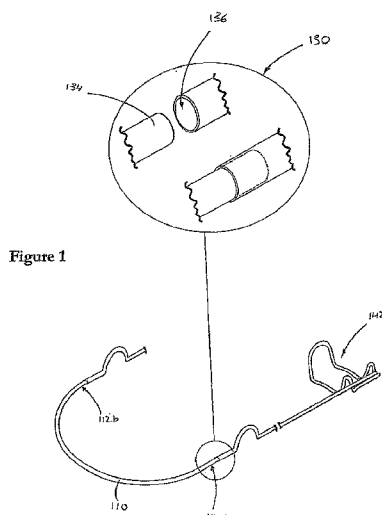
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[Continued on next page]

(54) Title: DENTAL RETAINER



(57) Abstract: The invention provides a dental retainer, suitable for use in retaining a user's teeth (not shown) in position, said dental retainer comprising a curved labial bow member suitable for abutment against the labial side of a row of teeth of a user, said bow member being composed of a fiber reinforced matrix of a suitable thermoplastic material. The bow member is configured and dimensioned to extend operationally from a first end to a second end along a labial side of a user's teeth from at least a pre-molar to a pre-molar on an opposed side of a user's mouth. The dental retainer further comprises a pair of support members which are connected to the ends of the labial bow member at their anterior ends respectively. Preferably, the support members are removably connected to the labial bow member by means of a connector. The bow member and the support member are mounted to a user's teeth operationally by means of a mounting device, such as an Adam's clasp, cross over members connected to a base plate or a loop member suitable for extending around a user's back molar to a base plate. The dental retainer further includes a canine stabilization component for stabilising the dental retainer against a user's canine teeth.



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B. FIELDS SEARCHED		
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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 practicable, search terms used) EPODOC, WPI, PAJ, NPL, PIPACS		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,759,029 A (MASAHIRO KOBAYASHI) 2 June 1998 (02.06.1998) <i>column 4, line 33 - column 6, line 7</i>	1-61,65-72
	--	
Y	WO 89 04640 A1 (THE UNIVERSITY OF CONNECTICUT) 1 June 1989 (01.06.1989) <i>claims</i>	1-61,65-72
	--	
X	WO 2006/018893 A1 (CHIKAMI KUNIO) 23 February 2006 (23.02.2006) <i>abstract, figures 1-4</i>	62-64
Y		1-32,55- 61,65,67-71
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "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 "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 "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 "&" document member of the same patent family		
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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.
Y	US 2005/0037312 A1 (SHINYA UCHIDA) 17 February 2005 (17.02.2005) <i>paragraphs 135-137, 165-167; figures 5, 7, 8, 22-24</i>	32-55,66-72
X	-- US 5,376,001 A (TEPPER HARRY W) 27 December 1994 (27.12.1994) <i>column 5, lines 19-68; figures 1, 12</i>	62-64
Y	--	1-55,65-72
X	-- US 4,976,614 A (TEPPER HARRY W) 11 December 1990 (11.12.1990) <i>column 5, lines 10-51; column 8, lines 5-56; figures 1, 7</i>	62-64
Y	--	1-55,65-72
X	-- US 5,607,300 A (TEPPER HARRY W) 4 March 1997 (04.03.1997) <i>column 4, line 29 - column 5, line 8; figures 1, 3</i>	62-64
Y	----	1-55,65-72

INTERNATIONAL SEARCH REPORT
Information on patent family members

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Patent document cited in search report			Patent family member(s)			Publication date
US	A	5759029	US	A	5759029	1998-06-02
WO	A	8904640	MX	B	173002	1994-01-27
			WO	A1	8904640	1989-06-01
			JP	T	3503848T	1991-08-29
			EP	A1	0389552	1990-10-03
			DE	T2	3853635T	1995-08-24
			BR	A	8807801	1990-08-07
WO	A	2006018893	WO	A1	2006018893	2006-02-23
US	A	2005037312	US	A1	2005037312	2005-02-17
			JP	A	2005007028	2005-01-13
US	A	5376001	US	A	5376001	1994-12-27
US	A	4976614	US	A	4976614	1990-12-11
US	A	5607300	US	A	5607300	1997-03-04