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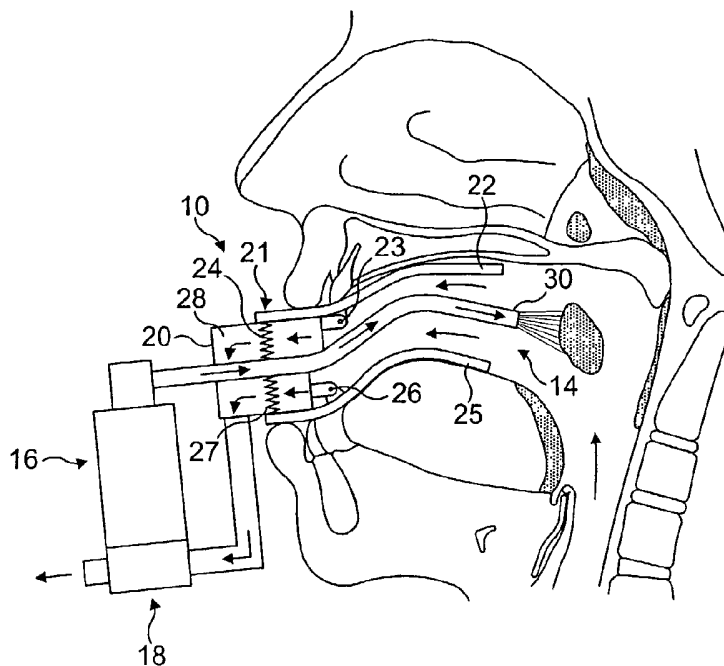
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(54) Title: DELIVERY DEVICE AND METHOD



(57) Abstract: A delivery device for and method of delivering substance, in particular a vaccine, to a mucosal surface within the oral cavity of a subject, the device comprising: a mouthpiece unit (10) to be gripped in the mouth of a subject, wherein the mouthpiece unit (10) is configured such that, on exhalation or attempted exhalation by the subject, a pressure is developed in the oral cavity which is such as to close the oropharyngeal velum of the subject; and an oral outlet unit (14) including at least one outlet (30) from which substance is in use delivered to a mucosal surface within the oral cavity of the subject.



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INTERNATIONAL SEARCH REPORT

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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

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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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98/53869 A (KELDMANN ERIK ; KELDMANN TROELS (DK); DIRECT HALER A S (DK); PELAEZ RI) 3 December 1998 (1998-12-03) page 1, line 20 - line 30; figure 1 page 18, line 22 - line 27	1-4, 22, 23, 25, 29, 35-37
X	US 5 113 855 A (NEWHOUSE MICHAEL T) 19 May 1992 (1992-05-19) column 5, line 26 - column 6, line 6; compound 11	1-3, 22, 23, 26, 33, 34, 36, 37
X	US 5 813 401 A (BAIR GREGG M ET AL) 29 September 1998 (1998-09-29) column 2, line 41 - line 57	1-3, 22-24, 33, 34, 36, 37
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Patent family members are listed in annex.

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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.
X	US 6 012 454 A (SMITH DAVID KEITH ET AL) 11 January 2000 (2000-01-11) column 13, line 12 - line 62; figure 1 -----	1, 4, 22, 23, 25, 33, 34, 36-38
A	WO 00/51672 A (DJUPESLAND PER GISLE) 8 September 2000 (2000-09-08) cited in the application page 17, line 22 - page 27, line 8 -----	1-3, 22, 23, 25, 29-31, 36
A	US 5 443 060 A (OTO ROY ET AL) 22 August 1995 (1995-08-22) column 5, line 12 - column 8, line 44 -----	1, 4-13, 17-21

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/IB2004/001974

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9853869	A	03-12-1998	AT 274956 T	15-09-2004
			AU 730843 B2	15-03-2001
			AU 7639298 A	30-12-1998
			BR 9809499 A	20-06-2000
			CA 2291005 A1	03-12-1998
			CN 1258223 T	28-06-2000
			DE 69825995 D1	07-10-2004
			WO 9853869 A1	03-12-1998
			DK 986413 T3	20-09-2004
			EA 2193 B1	28-02-2002
			EP 0986413 A1	22-03-2000
			HU 0002538 A2	28-12-2000
			JP 2001526577 T	18-12-2001
			NO 995798 A	26-11-1999
			NZ 501157 A	27-04-2001
			PL 336975 A1	31-07-2000
			SK 160499 A3	11-07-2000
			TR 9902899 T2	22-05-2000
			US 2002165482 A1	07-11-2002
			US 6648848 B1	18-11-2003
US 5113855	A	19-05-1992	US 5201308 A	13-04-1993
US 5813401	A	29-09-1998	NONE	
US 6012454	A	11-01-2000	US 5655523 A	12-08-1997
			AT 138814 T	15-06-1996
			AT 224748 T	15-10-2002
			AU 643435 B2	18-11-1993
			AU 5539590 A	29-11-1990
			AU 644790 B2	23-12-1993
			AU 5558890 A	29-11-1990
			CA 2050298 A1	29-10-1990
			CA 2058764 A1	29-10-1990
			CA 2354096 A1	15-11-1990
			DE 69027319 D1	11-07-1996
			DE 69027319 T2	21-11-1996
			DE 69027679 D1	08-08-1996
			DE 69027679 T2	14-11-1996
			DE 69034007 D1	31-10-2002
			DE 69034007 T2	08-05-2003
			DK 470154 T3	21-10-1996
			DK 472598 T3	29-07-1996
			EP 0470154 A1	12-02-1992
			EP 0472598 A1	04-03-1992
			EP 0705614 A1	10-04-1996
			ES 2087911 T3	01-08-1996
			ES 2091825 T3	16-11-1996
			WO 9013327 A1	15-11-1990
			HK 1006546 A1	05-03-1999
			JP 5501505 T	25-03-1993
			JP 4504671 T	20-08-1992
			JP 3130925 B2	31-01-2001
			KR 178798 B1	01-04-1999
			NZ 233486 A	26-05-1995
			NZ 248275 A	26-05-1995
			WO 9013328 A1	15-11-1990
			US 5619984 A	15-04-1997

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB2004/001974

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6012454	A	US 5740793 A	21-04-1998
WO 0051672	A 08-09-2000	AU 766410 B2	16-10-2003
		AU 2822700 A	21-09-2000
		BR 0008650 A	26-12-2001
		CA 2364009 A1	08-09-2000
		CN 1342093 T	27-03-2002
		EP 1161274 A1	12-12-2001
		EP 1180378 A2	20-02-2002
		GB 2349092 A ,B	25-10-2000
		WO 0051672 A1	08-09-2000
		ID 30286 A	15-11-2001
		JP 2002537908 A	12-11-2002
		MX PA01008849 A	21-07-2003
		NO 20014182 A	01-11-2001
		NZ 514442 A	29-08-2003
		PL 350220 A1	18-11-2002
		TR 200102563 T2	22-04-2002
		US 6715485 B1	06-04-2004
		US 2004182388 A1	23-09-2004
		ZA 200107206 A	02-12-2002
US 5443060	A 22-08-1995	US 5718225 A	17-02-1998