

(19) (KR)
(12) (A)

(51) 。 Int. Cl.⁷
A61M 11/00 (11)
A61M 15/08 (43) 10-2004-0004711
2004 01 13

(21) 10-2003-7016264
(22) 2003 12 12
2003 12 12
(86) PCT/IB2002/003034 (87) WO 2003/000310
(86) 2002 06 12 (87) 2003 01 03

(30) 0114272.8 2001 06 12 (GB)
(71) , -0773, 18
(72) , -0773, 18
(74)

⋮

(54)

⋮

3

⋮

(systemic) , (vaccine) ,

1 5 9 11 가 , (velum) 13 9 13 9 1 7 3 7, 9

가 , (concha)

10 20% 가 가 (polyps), (anti-histamines), (decongestants), (cromoglycates), (nasal congestion) 가

(first pass effect) 가

(BBB) 가 (CSF) 가 가

e) 가 (real-time exhalation breath)

obe) ; ; (I
 , , 1 2
가
 .

- 1 ;
- 2 1 ;
- 3 2 가 (nasal cavity) ;
- 4 2 ;
- 5 2 ;
- 6 2 ;
- 7 6 가 (nasal cavity) ;
- 8 6 ;
- 9 6 ;
- 10 3 ;
- 11 10 가 ;
- 12 10 ;
- 13 10 ;
- 14 4 ;
- 15 14 가 ;
- 16 14 ;
- 17 5 ;
- 18 17 가 ;
- 19 17 ;
- 20 6 ;
- 21 20 가 ;

[illegible]

49 46 , 가 , 가 ;

50 46 , , 가 , ;

51 46 .

2 5 1 (exhalation) .

15, 17 , , 19 .

17 17 - (frusto-conical) 가 20 21 .

17 17 가 .

19 , 21 19 , , 23 , 25 25 25 .

(aerosol splay) 25 23 , 25 25 (column) .

21 15 가 , 가 , 21 .

21 15 , 21 19가 15 가 .

23 (tip) 가 .

23 가 , .

23 (oval) .

2cm, 3cm, 2cm 3cm .

17 가 27 .

27 가 .

27 23 , 19 .

17 , 27 19 .

27 27 , .

27 가 23 27가 가 .

27 23
27 23
27 가
27 가
27 23 27 27
27 , 가 27
17
27 21 가
17 21
27 21 27
23 27
27 27
23 가 29 (HFA)
(canister)가 25 17
29
29 29 25
29 31 29 25
29 31 23
29 31 23
31 23 29 23
29
29
3 5
3 17 20
21 2cm 19

,
 , 21 19 (oropharyngeal velum)
 , 가 23 가
 , 19 23 , 27
 27 4
 21 4 , 21 23 , 27
 21 21
 , 23 31가
 29 , 25 23
 , 31 23
 , 23 19 , 17 27 5
 , 가 ,
 , 가 , 17가 가 29 , 17
 6 9 2
 1 , ,
 , 가 33
 19 21 가 23 33 , 가 21 23 23 ,
 19 가
 , 가 19
 21 23 1 , 가 19
 10 13 3
 1 , ,
 ,
 2 가 1 27a,27b , 17 가
 27b 가 27a,27b 21
 1
 14 16 4
 35, 37
 39
 37 40, - 37
 , 41

37 가 .
 , 41 39 43 , 39 45
 . , 43 , 45
 . , 45
 , 43 (tip) 가 .
 , , 43 가 , .
 43 (oval) .
 2cm 3cm , 41 2cm, 3cm,
 , 37 가 47 .
 , 47 가 , 41 , 41
 , 47 41 ,
 47 (gel) , 47 ,
 , 47 , 41 41
 (concha), (tubal ostia)
 (tubal ostia) , 가 .
 , 47 54 , 54 54
 , 47 47 , 41
 47 47 , 41
 가 49 (propellant), , (HFA)
 17 (canister)가 25
 , 29 49
 49 (pre-primeable)
 49 45 51 ,

49 , 51 43

49 51 43

51 43 49 , 43

49

49

49

49

15 16

15 , 37 41 , 2cm 40 , 39 ,

39 (oropharyngeal velum) 가

41 가 43

43 51가

49 , 45 43

51

39 , 37

가

가 49 37

37가 가

17 19 5

4

4 41 47

47 41 4

1 (concha), (sinus infundibulum) (sinus ostia)

10 15% , FDA

(nasal polypsis)

(mecca)'

가

가

47

54a,54b

54a,54b

4

20

22

6

4

4

41

47

47

41

47

4

(concha)

1

(BBB)

가

(CSF)

6cm 2

(slit)

가

10 μm

5% FDA

10 μ m
(velum)

가

(inhale

s) , $10\mu\text{m}$

가

10 μm

47

54

54

4

23

26

7

55, 57
59 .
57 60, (frusto)- 57
57 가 , 61 .
61 59 59
63 , 65 65
(65) 63 . 65
61 55 가 , 가 ,
61 가 55 가 , 59가 55
가 , 가 61
63 (tip) 가 .
63 가 ,
63 , 63 (oval) .
2cm 3cm 61 2cm, 3cm,
57 가 67
67 가 .
67 63 , 59
57 , 67 59
67
67 , 57
67 가 63
67 67가 63
67 가
67 63 63
67 63
67 가 ,
(encapsulating)
가 , 67
63 67 , 67 63
67 , 가 67

57

67 61
67 가 , 61

57 , 61

67 61 67
63

67 67 ,

63

67 61 61
67 (adenoids) (tubal

ostia) (concha), (epipharynx)

(tubal ostia) 가

67 74 , 74

67 67 , 61

67 67 , 61

가 69
(propellant), (HFA)

(canister)가 65

57

69 69

69 69 (pre-primeable)

69 65 71 ,

69 71 63

71 63

69 71 63

71 63 69 , 63

69

69

69

24 26

24 , 57 61 2cm 60 , 59

(oropharyngeal velum)

61 59 63 63 67 61

67 25 61 61 67 61

25 , 63 71가

69 63 65 71 63

63 59 57 67 26

가

가 57가 가 69 57

27 30 8 7 61 67 67 61 6

1 (concha), (sinus infundibulum) (sinus ostia)

(chronic sinusitis) 10 15% FDA (nasal polyposis) (mecca) 가

(drops) 가

67 , 74a,74b ,
74a,74b .
7
31 34 9
7 , ,
7 61 67
67 61 6
(concha)
1 (BBB) 가 , (CSF) 4 6cm²
(slit)
가
5% FDA 10μm 10μm
hales) , 10μm (velum) 가 (in
10μm
가
67 74
74
7
35 39 10
75, 77
79

77 80, (frusto)- 77

81 . , ,

81 82 , 83 가

82 82 . ,

82 82 83 가 , 83

82 , 85 가 , 85 82 ,

83 가 87 가 91

87 93 , 89 가 5 ml ,

93 95 , 85 가 87

95 97 , 85 가 8

7 가 87 91 , (35 38) , 85 가 가

87 91 2, (39) ,

(return biasing element) 99,

97 .

95 102, ,

97 103, 101

97 (35) , 101가 97 1,

2, (36 38) 101가 가 .

105 , 95 97 101

79 97 85 가 87

105 79 95

105 79 95

105 107 , 1 2 109,111

112, 107 , 95 (35 37)

101

109 113 가 , 1 2 115,117

. 115 79 , 107가 ,
 (35 37) , 79 ,
 115 (vane) .
 111 1 109 2 117 가
 , 95 97 ; 1 109 2 117
 1 115 107가 , 1 109
 2 117 2 111 1 109 2 117 180° 109
 , 1 115 111 (over
 -centered) , 95 97 .
 36 39 .
 36 , 1 , 103 101 ,
 95 97 .
 37 , 77가 , 80가 ,
 81 2cm 79 .
 elum) 가 79 , 79 (oropharyngeal v
 , 107 1 109 1 115
 105 107 105 97 ,
 85 가 87 95 97 ,
 38 , 1 109 1 115 1 109 2 117 ,
 2 111 가 101 39 ,
 107 95 97가 82 ,
 가 , 87 83 가 , 가 ,
 . , 79 , 77 .
 , 95 103 , 95 97
 85 99 가 87 91 . 97
 107가 97 , 107 ,
 112 .
 40 45 11 .
 10 , , .
 10 95 .
 85 가 95 97 10 , 가 , 87 가
 85 87 , 82 82
 81 , 85 97 , 97 ,
 85 , 85 97 , 97

가

87

(entrain)

(needle) 123

123

87

가

125

82

가

123

가

23

가 WO-A-00/51672

2
3

가

(vaccine) (systemic)

(57)

1.
가 (cuff member) ;

1 2.
가

1 3.
2 가

3 4.
가

3 5.
가 ; 가

1 6.
5

6 7.
가

6 8.
가

9. 6 , (a jet)
.
10. 9 ,
.
11. 9 ,
.
12. 6 ,
.
13. 1 12 , 가
.
14. 1 13 가 , 가
가 .
15. 14 , 가 ,
.
16. 1 15 , 가 ,
.
17. 16 , 가 ,
가 .
18. 16 17 , .
19. 16 18 , .
20. 19 , .
21. 16 20 , .
22. 16 21 , .
23. 16 22 , .
- 24.

- 16 23 , .
- 25.**
- 16 24 , .
- 26.**
- 16 25 , (sinus ostia) .
- 27.**
- 16 26 , (sinus infundibulum) .
- 28.**
- 16 27 , (epipharynx) .
- 29.**
- 16 28 , .
- 30.**
- 16 29 , .
- 31.**
- 1 30 , 가 , .
- 32.**
- 31 , .
- 33.**
- 31 , .
- 34.**
- 31 , .
- 35.**
- 31 34 , 가 , .
- 36.**
- 35 , .
- 37.**
- 35 , .
- 38.**
- 35 , .
- 39.**
- 1 38 , .
- 40.**
- 1 38 , 가

41. 1 40 , 가
42. 41 ,
43. 1 40 , 가
44. 43 , (periphery)
45. 44 ,
46. 44 , 1 2
47. 46 ,
48. 가 (cuff member) ;
49. 48 , 가
50. 48 49 , 가
51. 48 50 , 가
52. 51 , 가
53. 51 , ;
- 가 가 ; 가

- 48 **54.** 53 ,
.
- 54 **55.** ,
.
- 54 **56.** ,
.
- 54 **57.** , (a jet)
.
- 57 **58.** ,
.
- 57 **59.** ,
.
- 54 **60.** ,
.
- 48 **61.** 60 , 가
.
- 48 **62.** 61 , 가 ,
.
- 62 **63.** , 가 ,
.
- 62 **64.** 63 ,
.
- 62 **65.** 64 ,
.
- 65 **66.** ,
.
- 62 **67.** 66 ,
.
- 62 **68.** 67 ,
.
- 62 **69.** 68 ,
.

62	70.	69	,	.
62	71.	70	,	.
62	72.	71	,	(sinus ostia) .
62	73.	72	,	(sinus infundibulum) .
62	74.	73	,	(epipharynx) .
62	75.	74	,	.
62	76.	75	,	.
48	77.	76	,	가 , .
77	78.	,	,	.
77	79.	,	,	.
77	80.	,	,	.
77	81.	80	,	가 , .
81	82.	,	,	.
81	83.	,	,	.
81	84.	,	,	.
48	85.	84	,	.
	86.			

48 84 , 가

87.
48 86 , 가

88.
87 ,

89.
48 88 , 가

90.
89 , (periphery)

91.
90 ,

92.
90 , 1 2

93.
92 ,

94.
 , ,
(cuff member) ;
;

95.
94 , 가 ,

96.
94 95 , 가
가

97.
96 , 가

98.
96 , ; 가
가 가 ; 가

99.

94 98 ,
 .

99 100.

99 101.

99 102. (a jet)

102 103.

102 104. ,
.

99 105. , .

94 106. 99 , .

106 _____, _____

107. _____

94 108. 99 , .

108 _____, _____.

109. _____

108 110. 109 ,

108 111. 109 , .

106 111 , 1 μm 80 μm

112 **113.** , $1\mu\text{m}$ $50\mu\text{m}$.

113 **114.** , $1\mu\text{m}$ $30\mu\text{m}$.

115.

114 , 10 μ m 30 μ m

.

116.

115 , 10 μ m 20 μ m

.

117.

116 , 15 μ m 30 μ m

.

118.

94 117 , .

119.

94 118 , .

120.

119 , .

121.

94 120 , .

122.

94 121 ,

.

123.

94 122 ,

.

124.

94 123 ,

.

125.

94 124 , .

126.

94 125 , (sinus ostia)

.

127.

94 126 , (sinus infundibulum)

.

128.

94 127 , (epipharynx)

.

129.

94 128 , .

130.

94 129 , .

131.

94 130 , 가 , .

132.

131 , .

133.

131 , .

134.

131 , .

135.

94 130 , 가 , .

136.

135 , .

137.

135 , .

138.

135 , .

139.

94 138 , .

140.

139 , .

141.

94 140 , .

142.

141 , (periphery)
.

143.

142 ,
.

144.

142 , 1 2
.

145.

144 , .

146.

94 145 ,
가 .

147.

146 , 가
.

148.

146 147 , 가
.

149.

146 148 , 가 .

150.

149 ,
.

151.

149 , 가
.

152.

149 ,
.

153.

94 152 ,
가 .

154.

, ,
, 가 ,
;
;
;

155.

154 , .

156.

154 , .

157.

154 , .

158.

154 , 가 ,
.

159.

158 , .

160.

158 , .

161.

158 , .

162.

154 161 , , , .

163.

162 , , 가 .

164.

162 163 , .

165.

162 164 , .

166.

165 , .

167.

162 166 , .

168.

162 167 , .

169.

162 168 , .

170.

162 169 , .

171.

162 170 , .

172.

162 171 , (sinus ostia) .

173.

162 172 , (sinus infundibulum) .

174.

162 173 , (epipharynx) .

175.

162 174 , .

176.

162 175 , .

- 154 **177.** 176 , 가
가 .
- 177 **178.** , 가
가 .
- 177 **179.** , , 가
;
가 가 ; 가 .
- 154 **180.** 179 ,
.
- 180 **181.** , .
- 180 **182.** , .
- 180 **183.** , (a jet)
.
- 182 **184.** ,
.
- 182 **185.** ,
.
- 180 **186.** ,
.
- 154 **187.** 180 , .
- 187 **188.** , .
- 154 **189.** 180 , .
- 189 **190.** , .
- 189 **191.** 190 , .
- 192.**

189	190	,	.
187	191	,	1μm80μm
193		,	1μm50μm
194		,	1μm30μm
195		,	10μm30μm
196		,	10μm20μm
197		,	15μm30μm
154	198	,	.
199		,	.
154	198	,	.
201		,	(periphery)
202		,	.
202		,	12
204		,	.
154가	205	,	.
206		,	가

208.

206 207 , 가
.

209.

206 208 , 가 .

210.

209 ,
.

211.

209 , 가
.

212.

209 ,
.

213.

154 212 ,
가 .

214.

, 가 1 ,
가 2 ;
; 1 ;
2 가 가 ;
.

215.

214 , 가
가 .

216.

214 215 , 2 가
1 .

217.

216 , 2 가 1
.

218.

214 217 , 2
.

219.

218 , 1 .

220.

214 219 , 가
가 .

221.

220 , 가
가 1 2 ,

222.					
214	221	,			
223.					
222		,			
224.					
214	221	,			
225.					
224		,			
226.					
224	225	,			
227.					
224	225	,			
228.					
222	227	,	1 μ m	80 μ m	
229.					
228		,	1 μ m	50 μ m	
230.					
229		,	1 μ m	30 μ m	
231.					
230		,	10 μ m	30 μ m	
232.					
231		,	10 μ m	20 μ m	
233.					
232		,	15 μ m	30 μ m	
234.					
214	233	,	가	가	가
가	가	,		가	가
2					
235.					
214	234	,		1	
		,		가	
1					
236.					
234	235	,	가		

237.

236 , 가
.

238.

236 , 가
.

239.

236 238 , 가 가 가
.

240.

239 , 가
.

241.

240 , 가 , 가
.

242.

214 241 ,
.

243.

214 241 ,
.

244.

214 243 , 1
.

245.

244 ,
.

246.

244 ,
.

247.

214 243 , 1 (a jet)
.

248.

214 233 ,
.

249.

214 233 ,
.

250.

214 249 ,
3 , 1
.

251.

250 , 3 1 .

252.

가 (cuff member) ;

(cuff member) ; ,

;

253.

252 , 가 .

254.

252 253 , ;

가 ; 가 .

255.

254 ,

가 가 .

256.

254 , 가 ; ,

가 ; 가 .

257.

252 256 , 가 .

258.

252 257 , ,

.

259.

258 ,

가 ,

.

260.

258 259 , .

261.

258 260 , .

262.

261 , .

263.

258 262 , .

264.

258 263 , .

258	265.	264	,		.
258	266.	265	,		.
258	267.	266	,		.
258	268.	267	,	(sinus ostia)	.
258	269.	268	,	(sinus infundibulum)	.
258	270.	269	,	(epipharynx)	.
258	271.	270	,		.
258	272.	271	,		.
252	273.	272	,	가	,
					.
273	274.		,		.
273	275.		,		.
273	276.		,		.
252	277.	272	,	가	,
					.
277	278.		,		.
277	279.		,		.
277	280.		,		.
	281.		,		.

가 , (cuff member) ;
;
.
282.
281 , 가
.
283.
281 282 , 가
.
284.
281 283 , ;
가 ; 가
.
285.
284 ,
가 가 .
286.
284 , 가 ; ,
가 ; 가 .
287.
281 286 , 가
.
288.
281 287 , ,
.
289.
288 , ,
가 .
290.
288 289 , .
291.
288 290 , .
292.
291 , .
293.
288 292 , .
294.
288 293 , .
295.

288	294	,	.
296.			
288	295	,	.
297.			
288	296	,	.
298.			
288	297	,	(sinus ostia)
299.			
288	298	,	(sinus infundibulum)
300.			
288	299	,	(epipharynx)
301.			
288	300	,	.
302.			
288	301	,	.
303.			
281	302	,	가 ,
304.			.
303	,		.
305.			
303	,		.
306.			
303	,		.
307.			
281	302	,	가 ,
308.			.
307	,		.
309.			
307	,		.
310.			
307	,		.
311.			
	,		,
	,		

- (cuff member) ;
- ;
- 312.
- 311 , 가 .
- 313.
- 311 312 , ; 가 ; 가 .
- 314.
- 313 , 가 가 .
- 315.
- 314 , 가 ; , 가 ; 가 .
- 316.
- 311 315 , .
- 317.
- 316 , .
- 318.
- 311 315 , .
- 319.
- 318 , .
- 320.
- 318 319 , .
- 321.
- 318 319 , .
- 322.
- 311 320 , 1 μ m 80 μ m .
- 323.
- 322 , 1 μ m 50 μ m .
- 324.
- 323 , 1 μ m 30 μ m .
- 325.
- 324 , 10 μ m 30 μ m .
- 326.

325	,	10 μ m	20 μ m	.
327.				
326	,	15 μ m	30 μ m	.
328.				
311	327	,		.
329.				
311	328	,		.
330.				
329	,			.
331.				
311	330	,		.
332.				
311	331	,		.
333.				
311	332	,		.
334.				
311	333	,		.
335.				
311	334	,		.
336.				
311	335	,	(sinus ostia)	.
337.				
311	336	,	(sinus infundibulum)	.
338.				
311	337	,	(epipharynx)	.
339.				
311	338	,		.
340.				
311	339	,		.
341.				
311	340	,	가	,
342.				.
341	,			.
343.				
341	,			.

344.

341

,

.

345.

311

340

,

가

,

,

.

346.

345

,

.

347.

345

,

.

348.

345

,

.

349.

311

348

,

가

.

350.

,

,

,

,

,

(lobe)

;

;

.

351.

350

,

.

352.

350

,

.

353.

350

,

.

354.

350

,

가

,

,

.

355.

354

,

.

356.

354

,

.

357.

354

,

.

358.

350

357

,

,

.

- 358 **359.** , 가 .
- 358 **360.** 359 , .
- 358 **361.** 360 , .
- 361 **362.** , .
- 358 **363.** 362 , .
- 358 **364.** 363 , .
- 358 **365.** 364 , .
- 358 **366.** 365 , .
- 358 **367.** 366 , .
- 358 **368.** 367 , (sinus ostia) .
- 358 **369.** 368 , (sinus infundibulum) .
- 358 **370.** 369 , (epipharynx) .
- 358 **371.** 370 , .
- 358 **372.** 371 , .
- 350 **373.** 372 , ; 가 ; 가 .
- 373 **374.** , 가 가 .
- 375.**

- 374 , 가 ; ,
가 ; 가 .
- 376.**
350 375 , .
- 377.**
376 , .
- 378.**
350 375 , .
- 379.**
378 , .
- 380.**
378 379 , .
- 381.**
378 379 , .
- 382.**
376 380 , $1\mu\text{m}$ $80\mu\text{m}$.
- 383.**
382 , $1\mu\text{m}$ $50\mu\text{m}$.
- 384.**
383 , $1\mu\text{m}$ $30\mu\text{m}$.
- 385.**
384 , $10\mu\text{m}$ $30\mu\text{m}$.
- 386.**
385 , $10\mu\text{m}$ $20\mu\text{m}$.
- 387.**
386 , $15\mu\text{m}$ $30\mu\text{m}$.
- 388.**
350 387 , 가 .
- 389.**
 , 1 , 가
2 .
- 390.**
389 , ;
가 ; 가 .

391.

389 390 , 2 가
1 .

392.

391 , 2 가 1
.

393.

389 392 , 2 ,
가 가 .

394.

389 393 , 가
가 .

395.

394 , 가 , 가
1 2 .

396.

389 395 , .

397.

396 , .

398.

389 395 , .

399.

398 , .

400.

398 399 , .

401.

398 399 , .

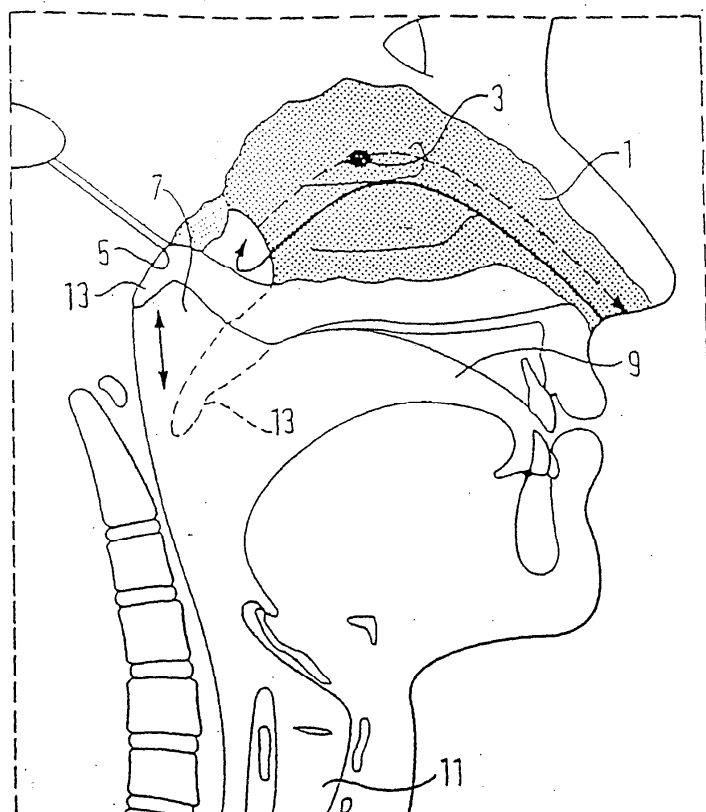
402.

20 2 5 , 6 9 , 10 13 , 14 16 , 17 19 ,
22 , 23 26 , 27 30 , 31 34 , 35 39 , 40
45 , 46 51 .

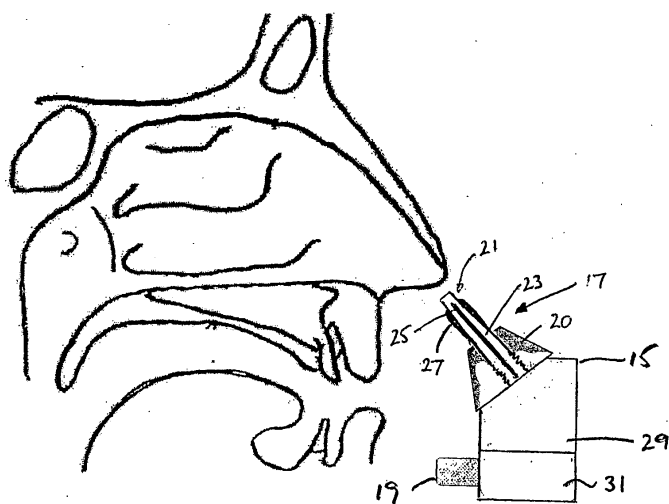
403.

20 2 5 , 6 9 , 10 13 , 14 16 , 17 19 ,
22 , 23 26 , 27 30 , 31 34 , 35 39 , 40
45 , 46 51 .

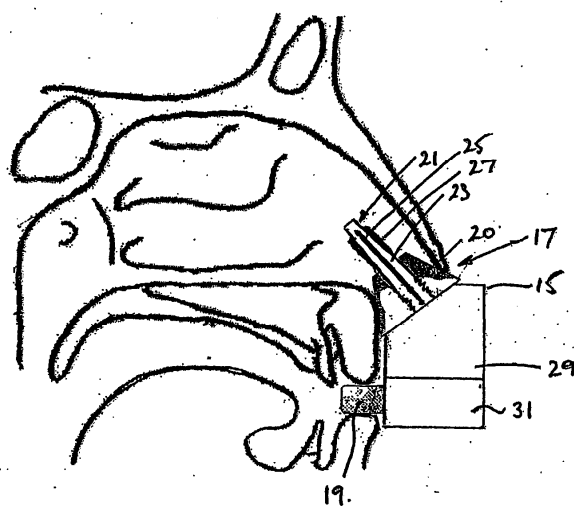
1



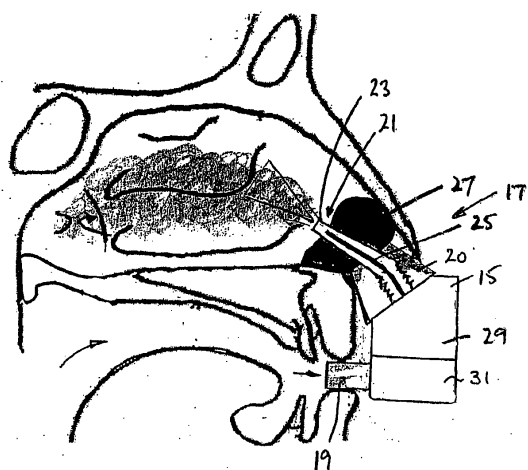
2



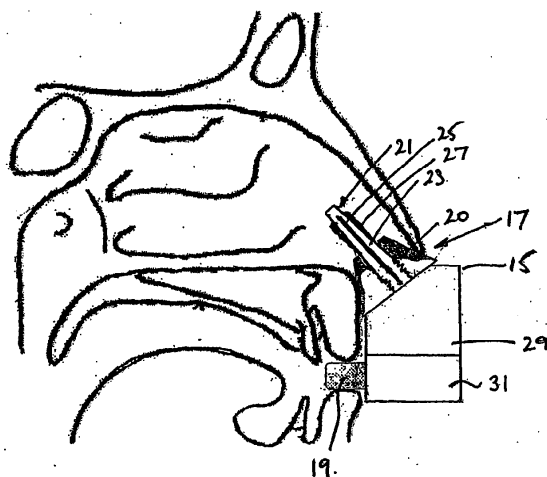
3



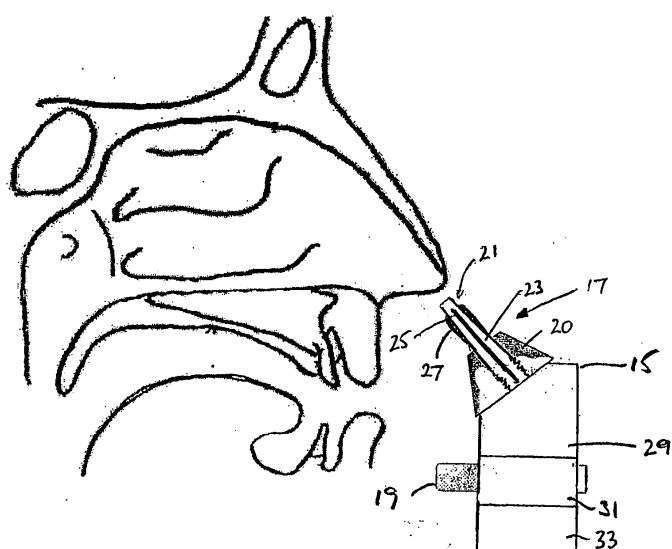
4



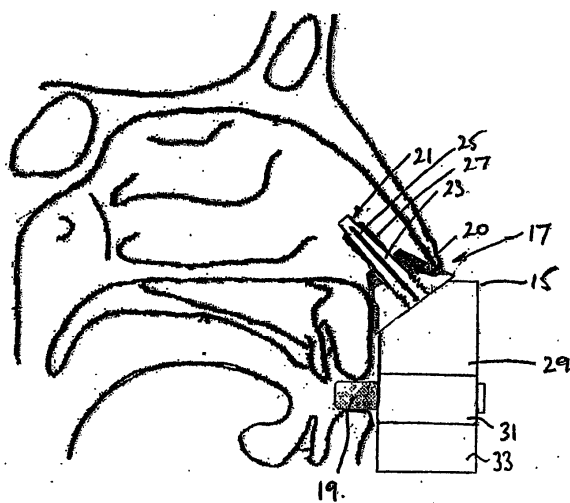
5



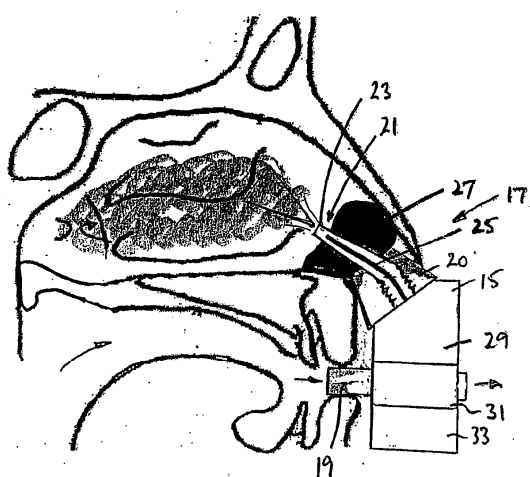
6



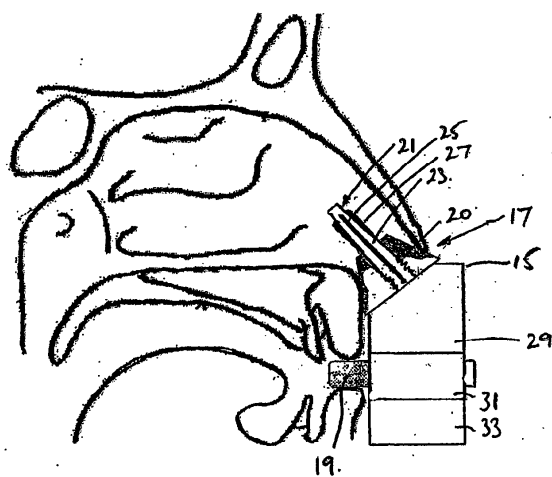
7



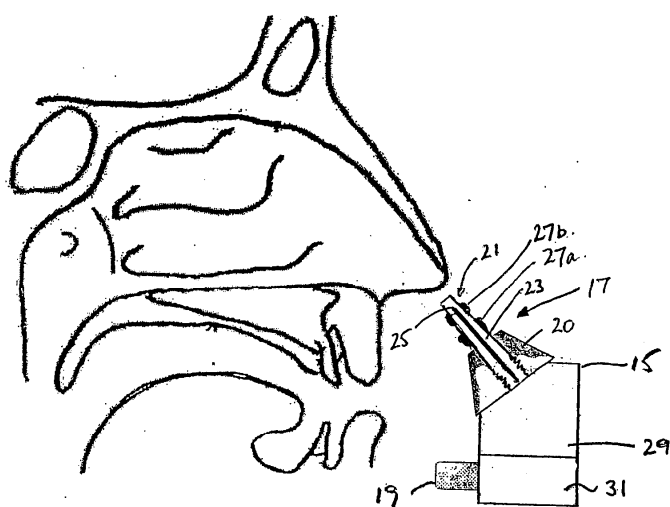
8



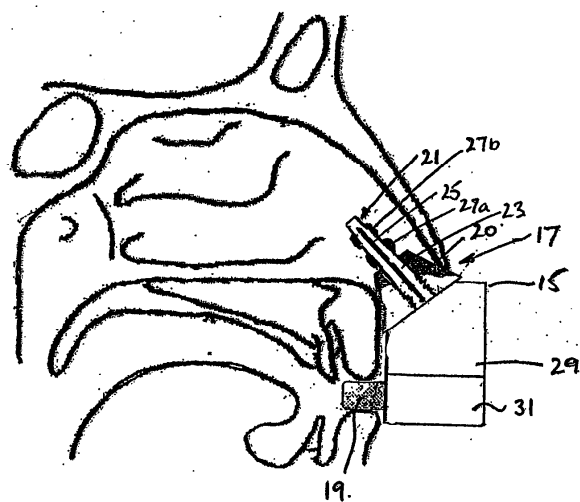
9



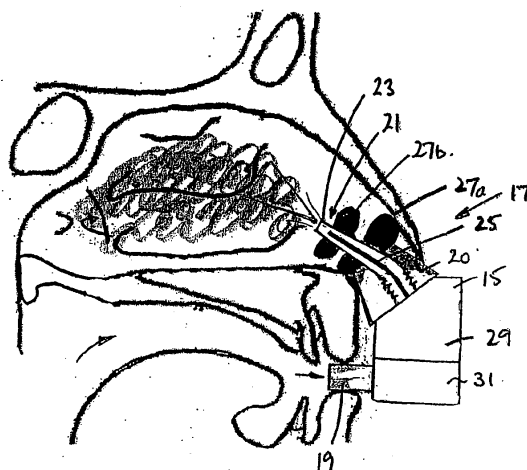
10



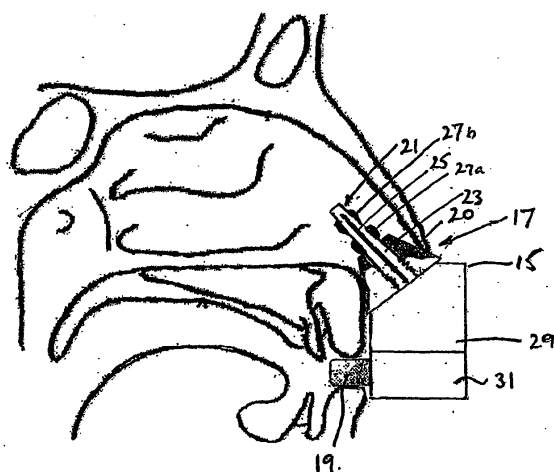
11



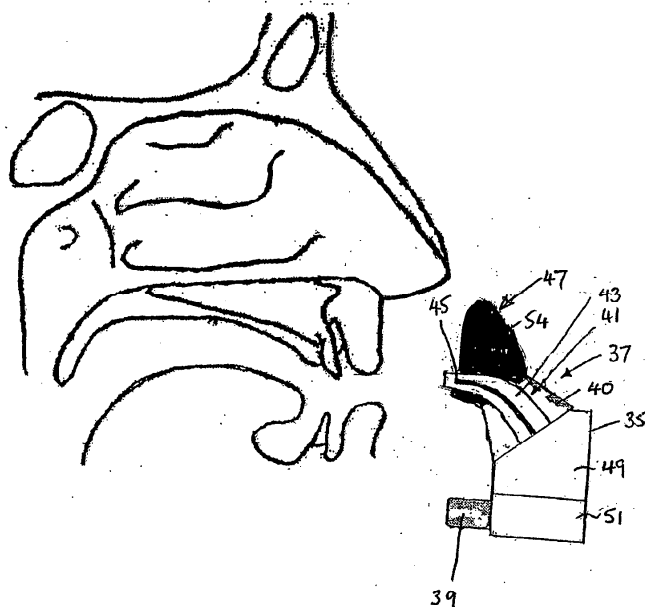
12



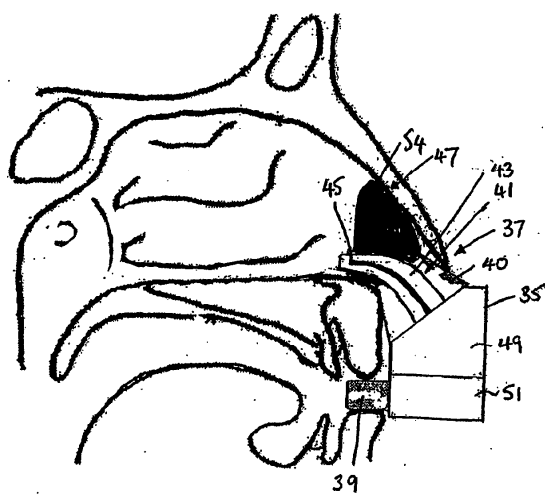
13



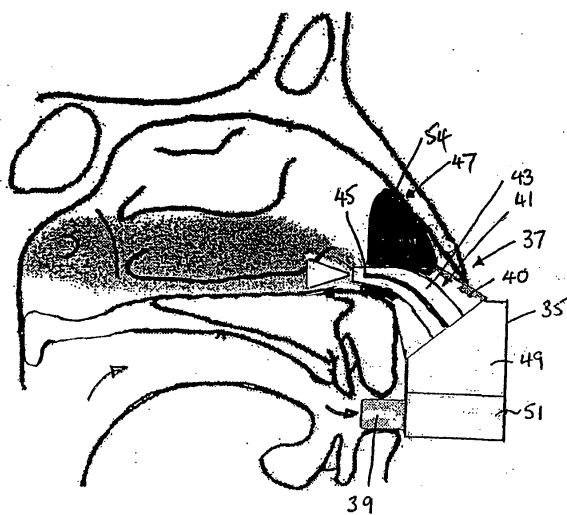
14



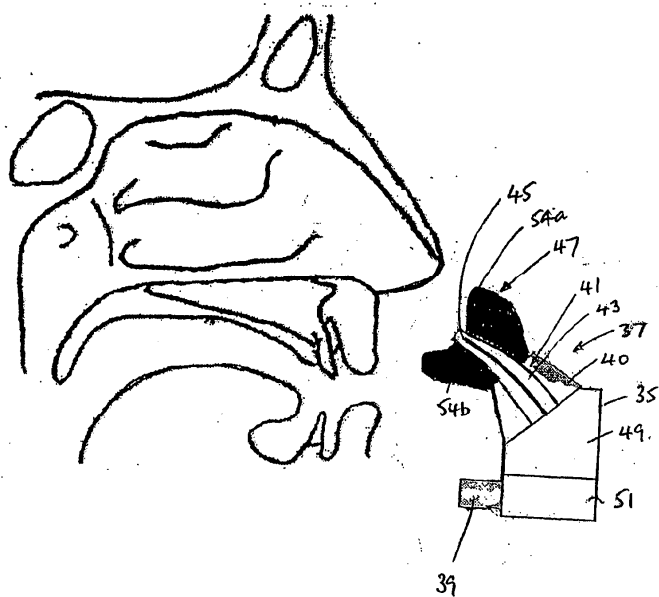
15



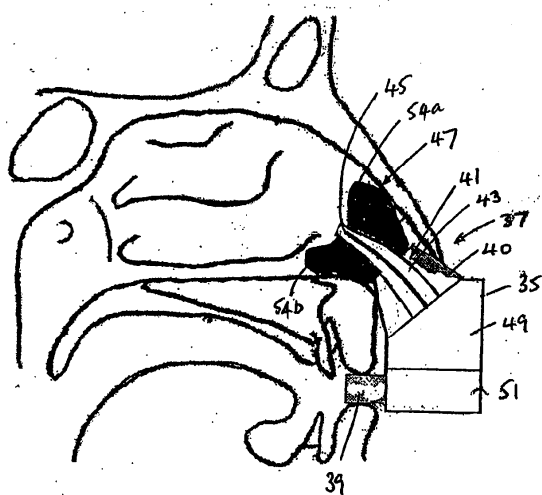
16



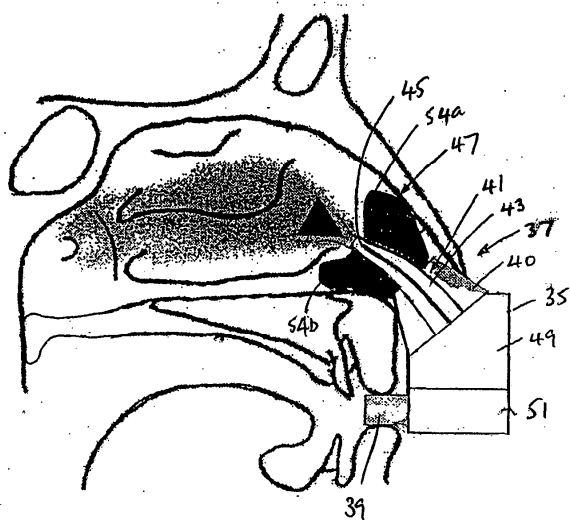
17



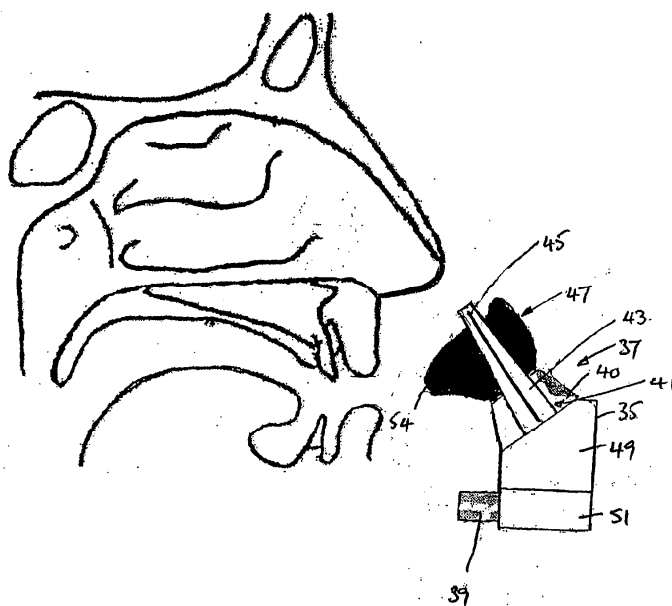
18



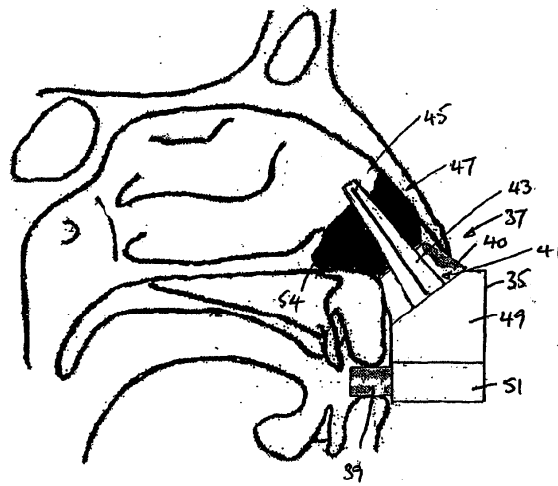
19



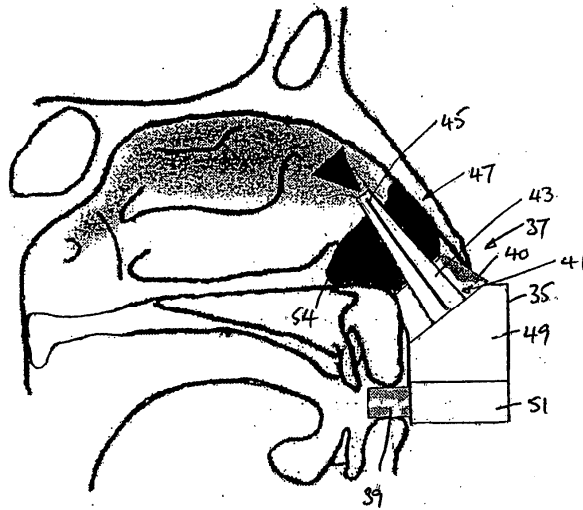
20



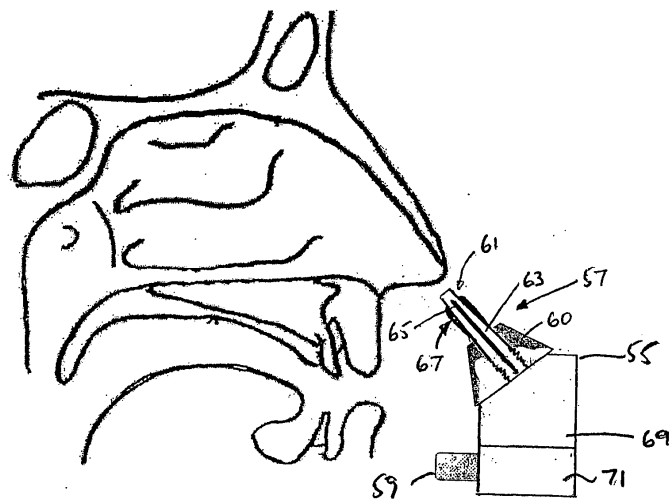
21



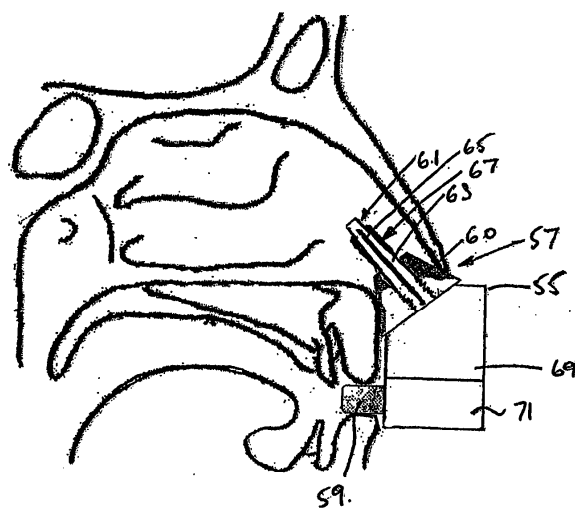
22



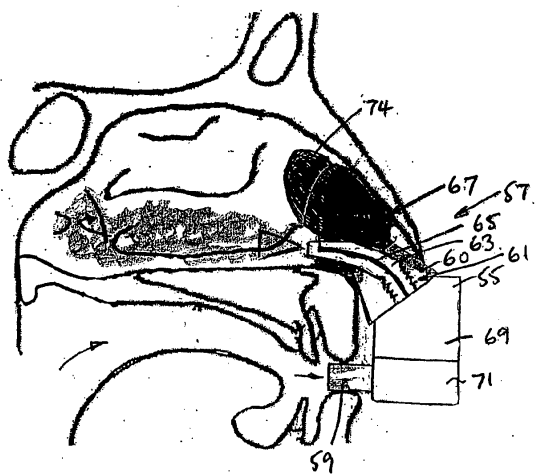
23



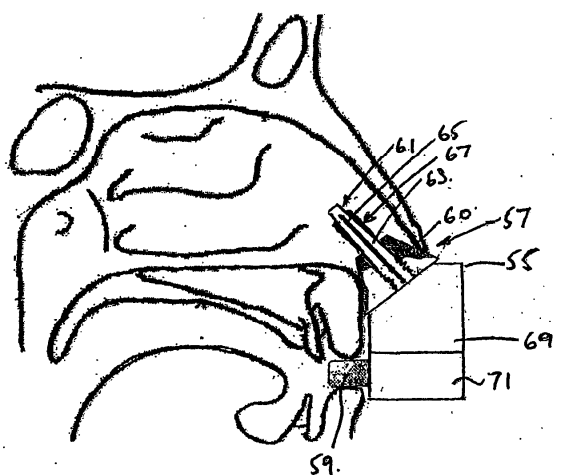
24



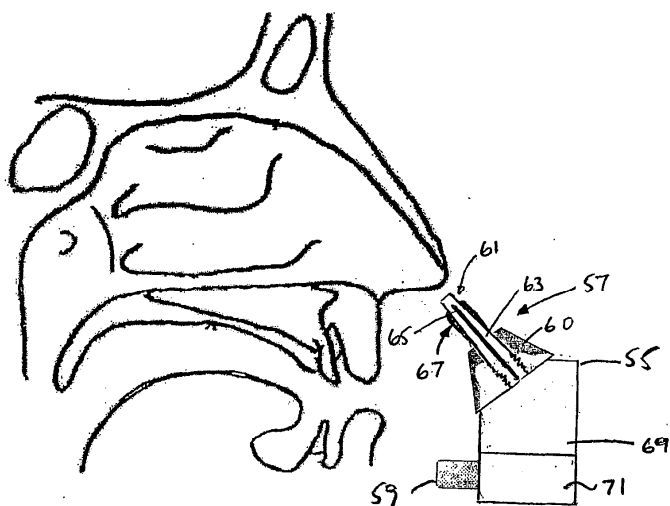
25



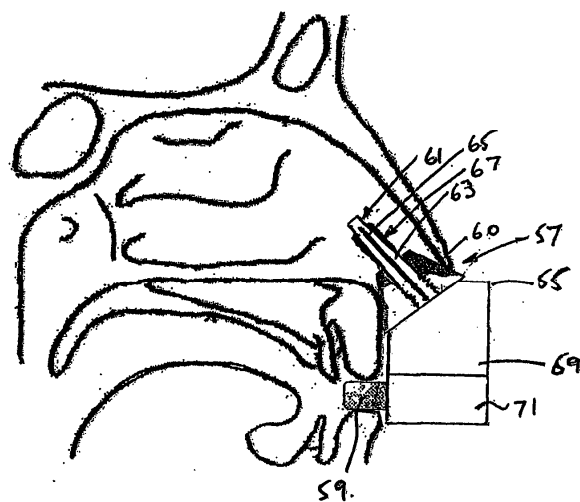
26



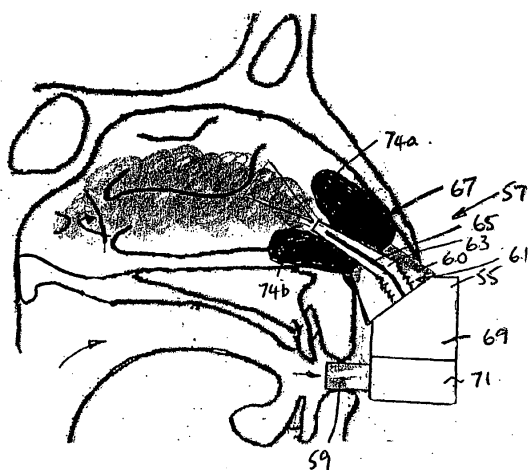
27



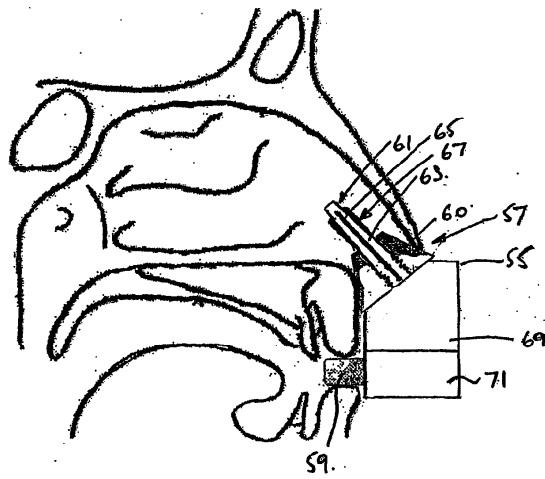
28



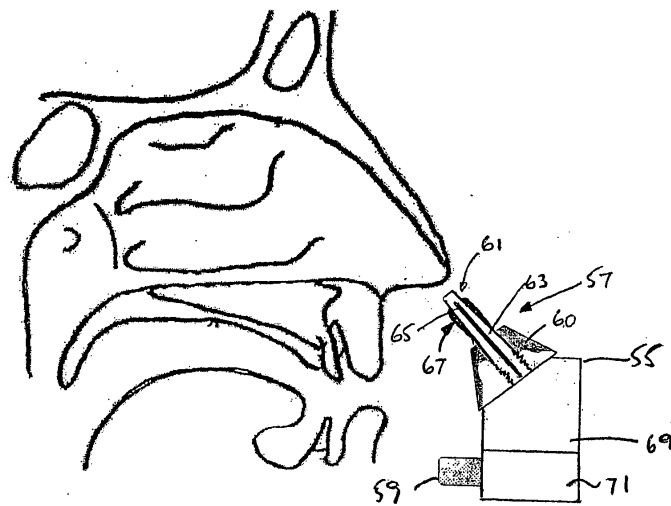
29



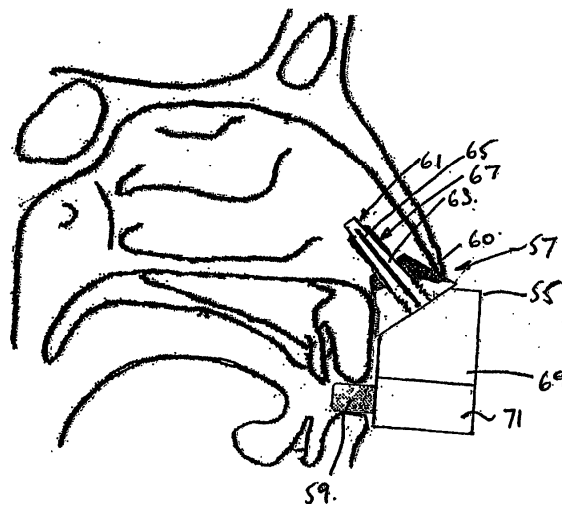
30



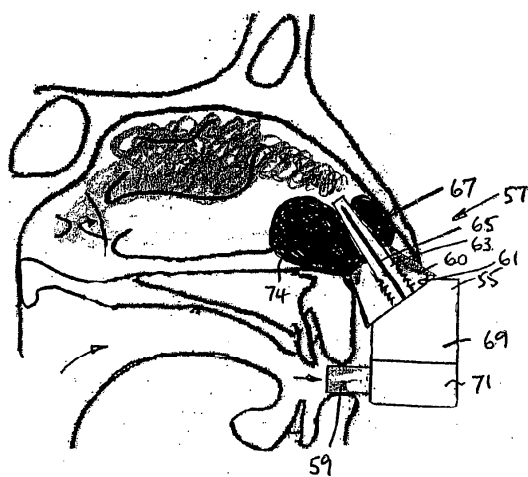
31



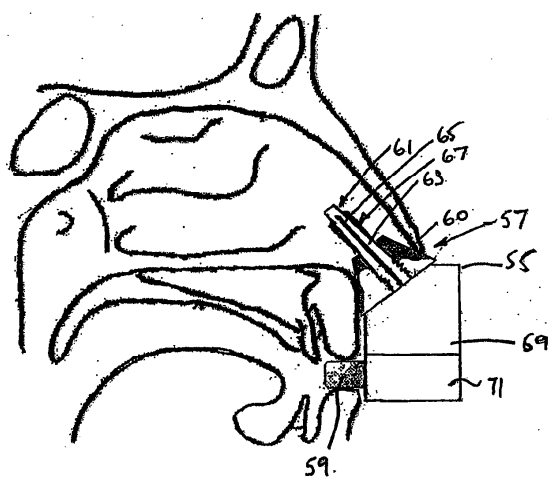
32



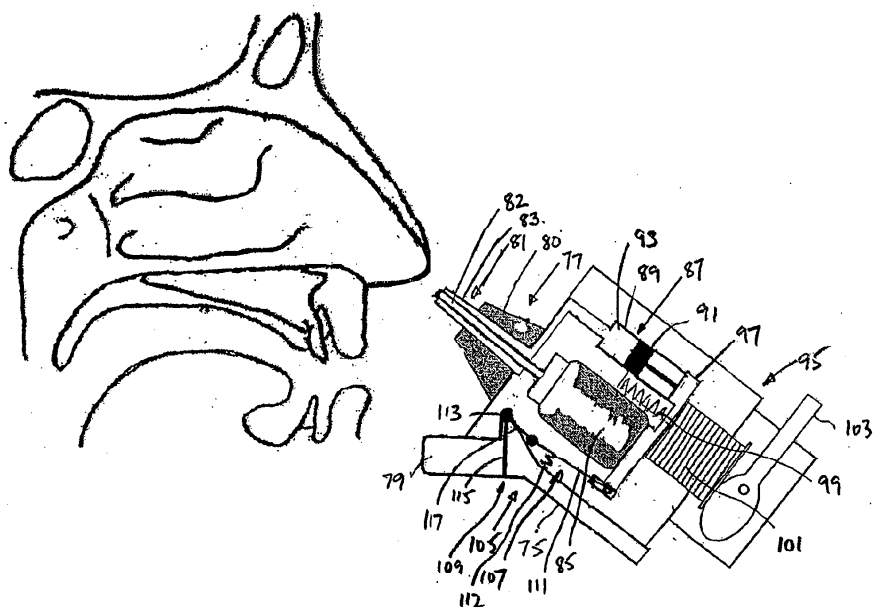
33



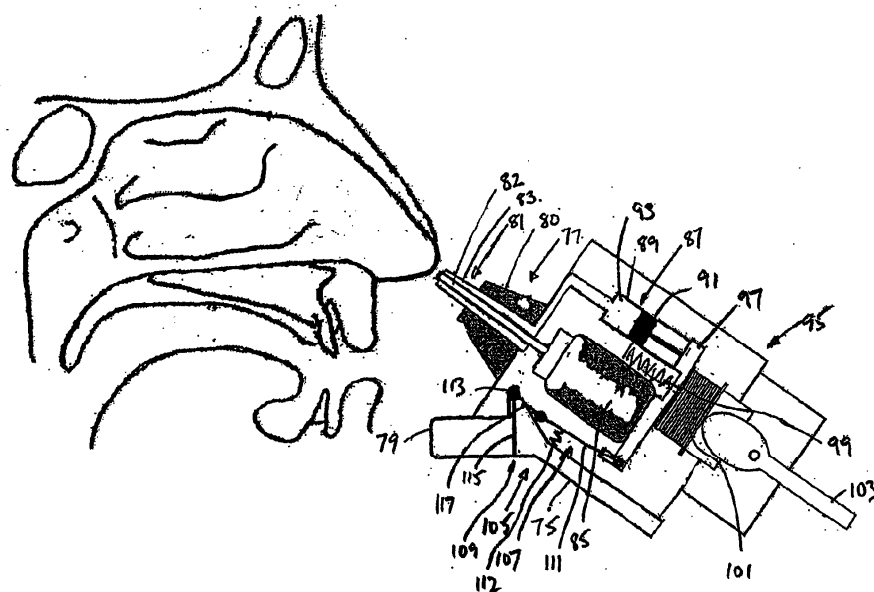
34



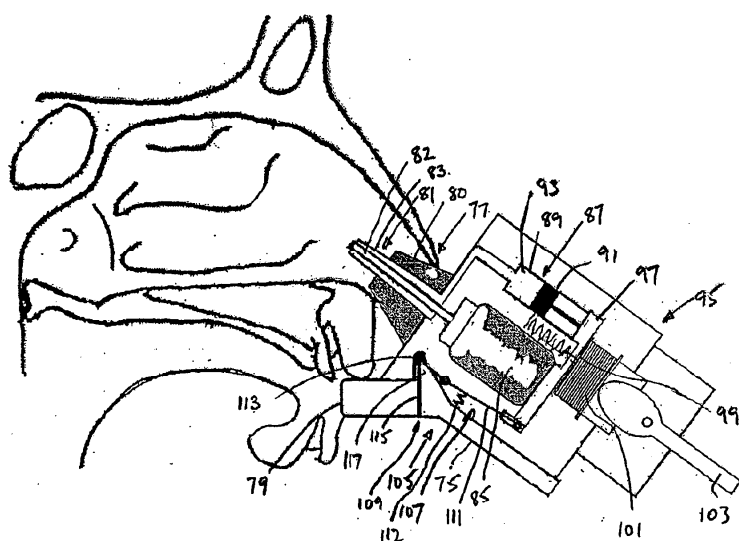
35



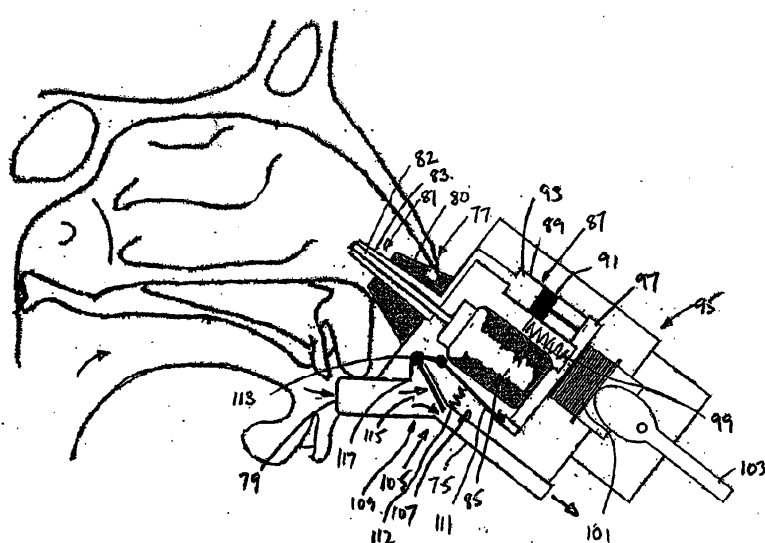
36



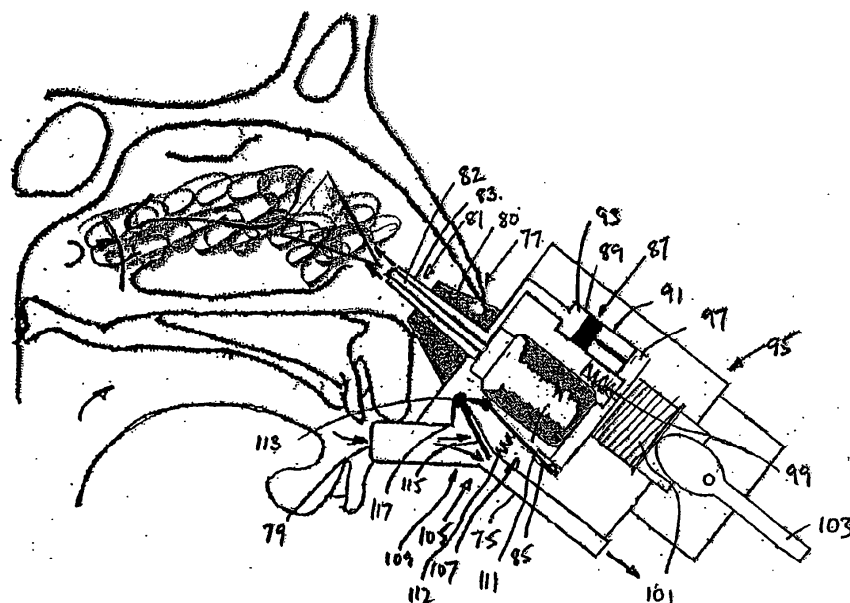
37



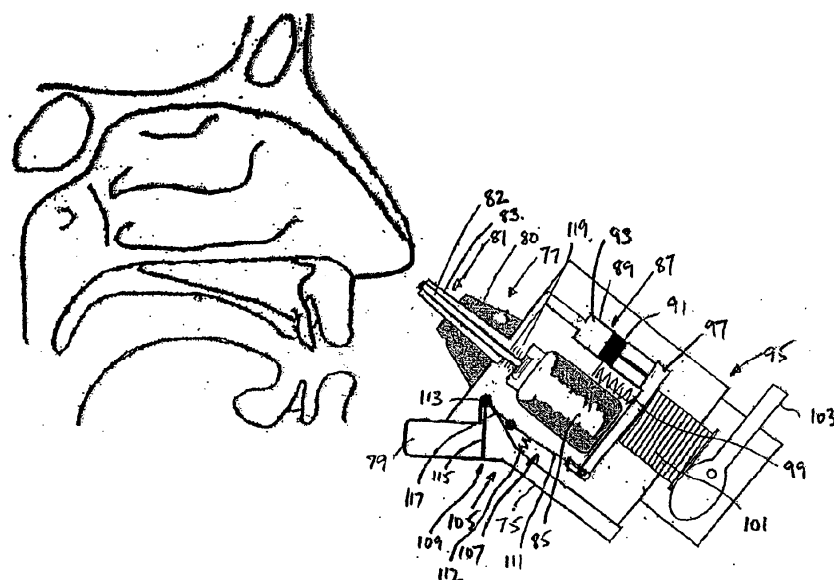
38



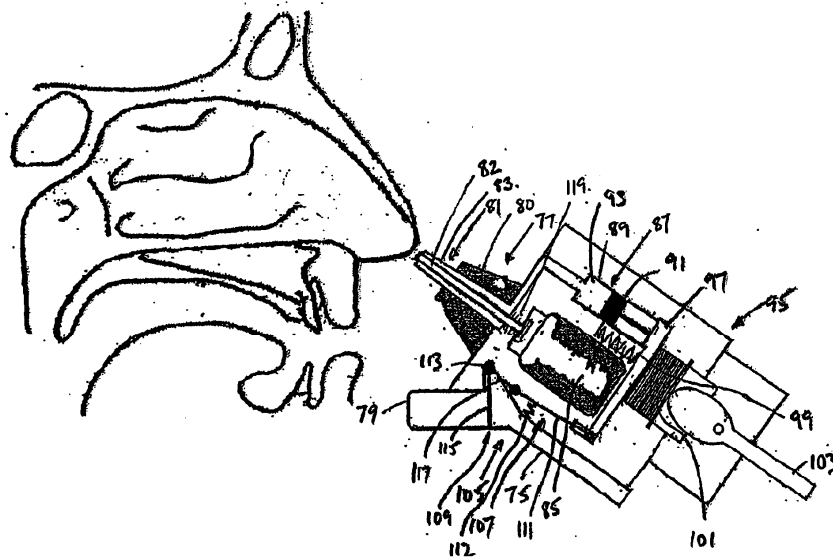
39



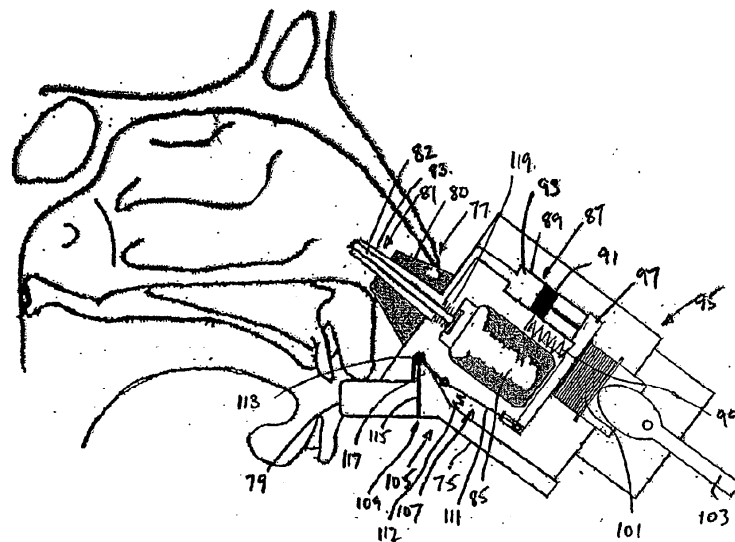
40



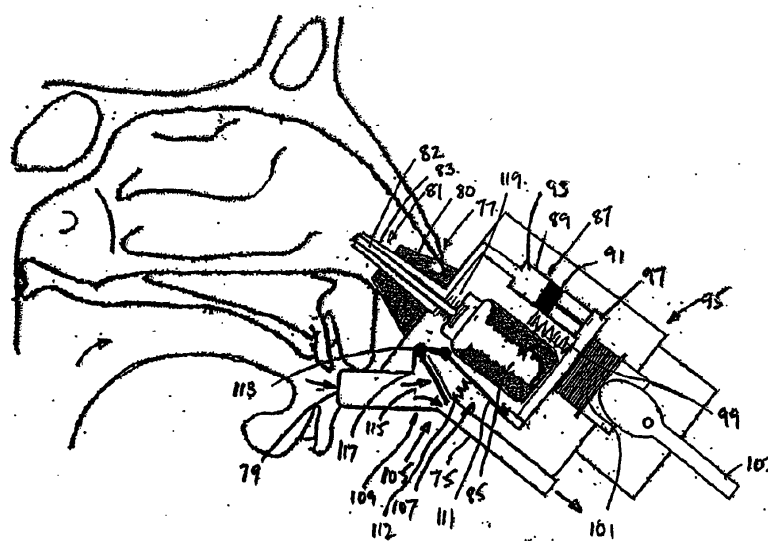
41



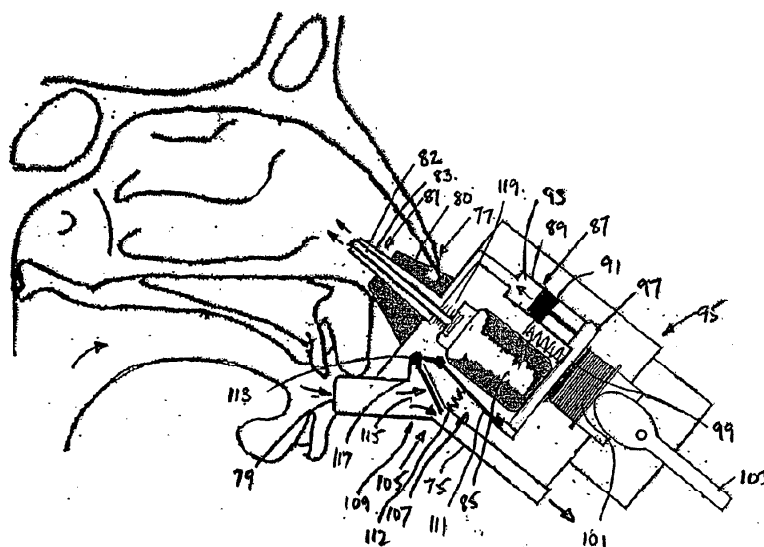
42



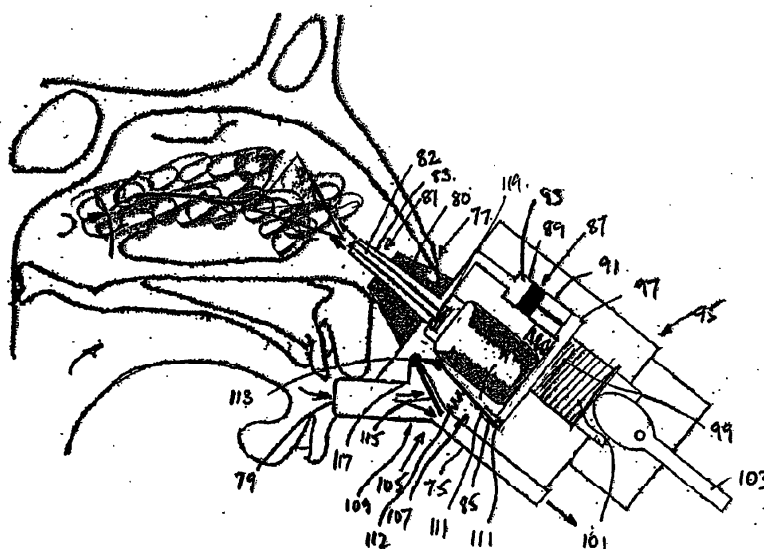
43



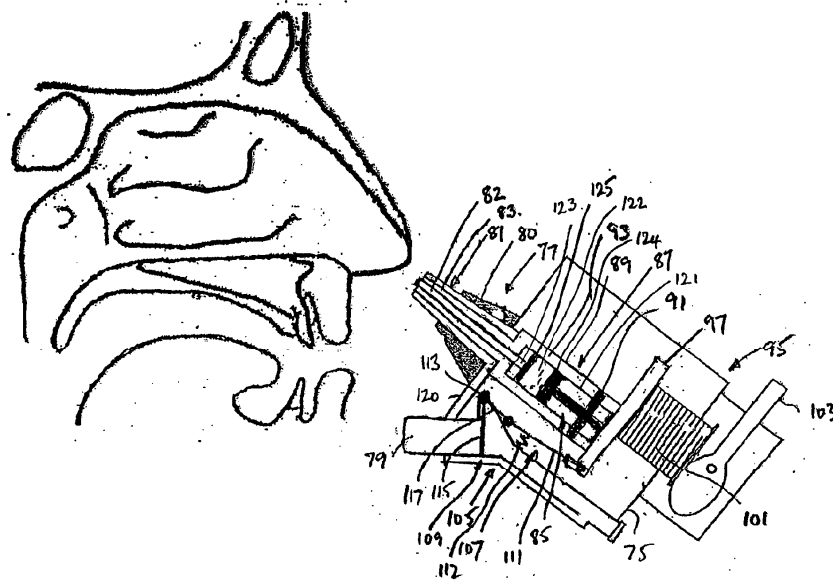
44



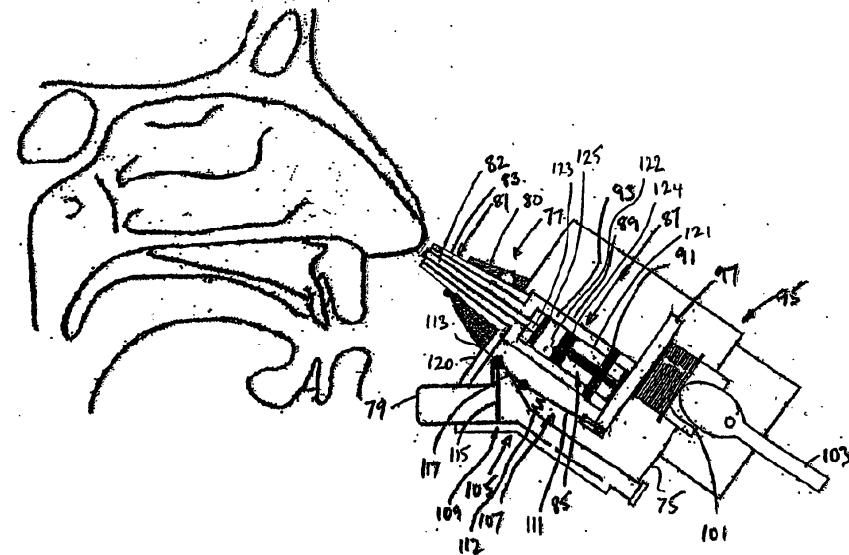
45



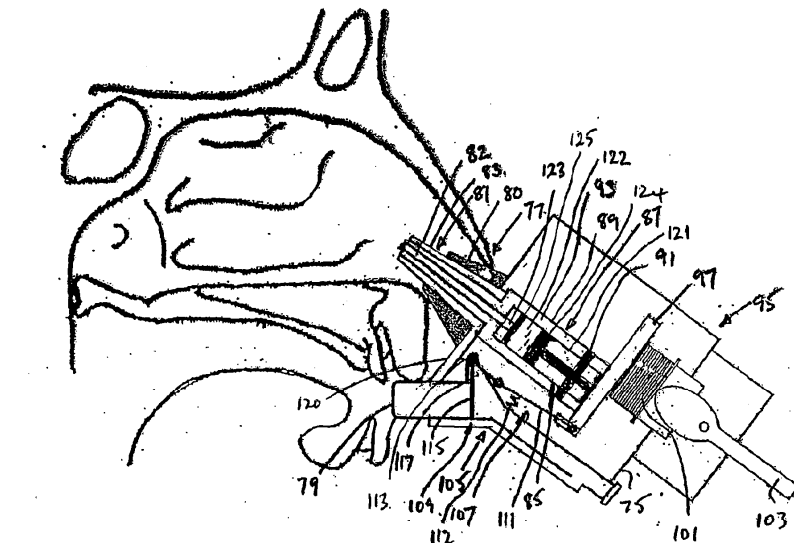
46



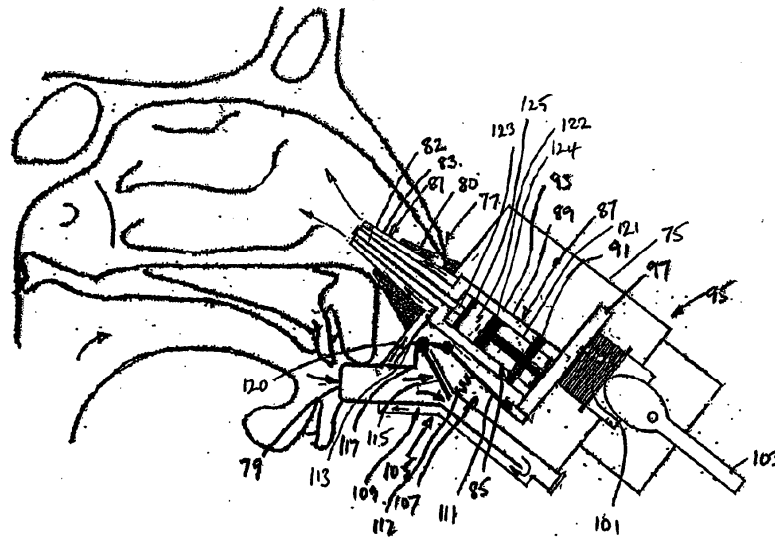
47



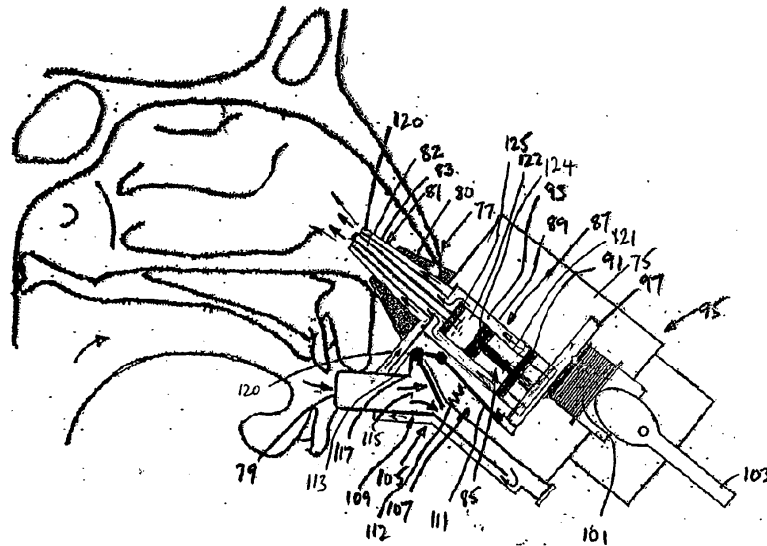
48



49



50



51

