

(19)
(12)

(KR)
(A)

(51) 。 Int. Cl.⁷
A61B 5/00

(11)
(43)

10-2005-0006180
2005 01 15

(21)	10-2004-7017008
(22)	2004 10 22
	2004 10 22
(86)	PCT/US2003/012382
(86)	2003 04 22

(87)	WO 2004/001373
(87)	2003 12 31

(30)	60/374,133	2002 04 22	(US)
------	------------	------------	------

(71) 72 (: 06473)

(72) ' , ' 72 (: 06473)

(74)

⋮

(54)

가 (semi-invasive)

가 (vital sign)

가 (core temperature)

가 (thermometer pill)

Abreu 6,120,460

가 가

가 가

가 가

가 , ()

가 , (hydration) , (hemodynamic) 가 ,

가 ,

(BTT; Brain Temperature Tunnel) 가

(main entry point)

()

가 18 20% 가 2% (scalp), , CSF() BTT

BTT 가 BTT

가 :

- 1) 가 ,
- 2) (terminal branch)
- 3)
- 4)
- 5) 가
- 6) (shunt)

(medial canthal tendon) 1/3 (眼角;) 가 , BTT

(horn) 22 mm 11 mm , 6 mm

BTT

가 , (superior ophthalmic vein)

(endothelium-lined) , BTT

1 2

가

가 , BTT

가

가 BTT (1 8). BTT

(target area)

가 , BTT (Brain Thermal Energy)

가 ,

가 , 45%

(hematocrit) $3.6 \text{ J} \cdot \text{M}^{-1} \cdot ()^{-1}$, BTT

가

BTT : 1)

가 , 3)

가 , 2)

가 , 4) BTT

(histomorphometric)

가 , 5)

가 , 6) BTT

가 , 7) BTT

가 , 8)

BTT

BTT

6,312,393 BTT

37.1 (98.8 ° F)

BTT

3 (0.5 ° F)

가

0.5 (0.9 ° F)

BTT

BTT

1.2 , BTT

BTT

가 BTT

BTT

Abreu 6,120,460

0.1 (0.18 ° F)

가 BTT 0.

가

가

가

TempAlert가, BTT

가

(가

가

가

2.5 mm

가

1/3

3 mm

6

7 mm

(Wien)

BTT

BTT

(thermopile)

, MCU(

BTT

가

BTT

BTT

BTT

, BTT

BTT

가

가

가

가

가

가

가

가

가

가

(

)

가

BTT

BTT

가

Beer - Lambert

가

BTT

BTT

가

가

가

가

가
가

(electroporation),

, B

TT

BTT

940 660

LED

가

가 가

BTT

(transensor)

가

가

7 mm

가

가

2mm
(mylar)

(

BTT

가

BTT

(

가

가

. BTT

가

가

(thermography)

가

3

(thermal wave)

가

(ind

icator)

가

()

(ultrafiltrate)

가

(water intoxication)

pH

가

가

가

pH,

(markers),

pH

가(二價; divalent)

가

HIV

/

가

(hydration)

가

가

가
가

20

가

가

()

()

가

38.5

BTT

가

BTT
가

가

가

가

가

가

가

가

가

가

가

가

가

가

[illegible]

가

가

가

가

가

. BTT

가 가

(,)

()

BTT

가

가

(, ,)

가

가

BTT

, BTT

, B

TT

BTT

()

가

()

가 가 가

가

가

가

가

(pager;),

1a

1b

2a

2b

2c 2b

3a

3b 3a

4a

4b 4a

5a

5b 5a

5c 5a

5d 5c

6

6a

7a 7b

8a 8b

9a 9b

10

11

12a

12b 12a 가

13

14

15a 15e

16a 16c

17

18

19a1, 19a2, 19b, 19c 19d

20a 20c 가 가

21a 21b

22a 22c

23a 23b

24

25 가

26a

26b

27

28a

28b 28a

28c 28b

29 (clip-on)

30

31a

31b 31a

31c 31b

31d

32a

32b 32a

33a

33b

34 가

35

36

37 (thermal emission)

38

39

40

41a 41b

1a

1b

2a

(BTT) BTT
4 mm 5 mm
(fan)

BTT

, BTT,

BTT

, BTT

(P) $P = \sigma \cdot e \cdot A \cdot T^4$ (, $\sigma = 5.67 \times 10^{-8} \text{ W.m}^{-2} \cdot \text{K}^{-4}$),
 T^4 , e 가 가 가 .
 , BTT .
 BTT 0.5% .
 2a (12)가 (10) . BTT(20) (10), (12)
 , (14) , (16) . (12, 14,
 16)
 가 , .
 (10) (16) , (10) (((18) , (19))
 19) (17) .
 (19) , (19) (non-tunnel) (30, 40)
 (39, 49) , (19) , BTT(20) (19)
 , .
 2 (30, 40) ,
 . 1. :
 2 34a 36g 44a 46g , . 2. :
 가 (36e 46e) .
 36e 46d 가 .
 , (20) ,
 가 (19) (19) (19) (17) (19)
 . BTT 가 , (19) 가 (17) (16)
 가 () .
 0.2 0.3 , 가 , .
 , .
 (30, 40) (30, 40) ,
 (30, 40) 가 가 .
 , .
 가 (30) (32) 34 (32) (30) (32) ,
 , (36a, 36b, 36c, 36d) .
 (36a, 36b, 36c) 가 .
 (34a) (30) (37)
 (32) (34) (39) 가 (30)
 가 (38) (38) (39)
 36d 36e , 36d 36e 가 (30)

36f (39) .

(39) 가 , (38) 가 가

36g 가 가 , 가, BTT(20) (30, 40) 가

BTT

BTT

2 (40) (42) (30) (44a) (46a, 4

6b, 46c) (36a, 36b, 36c) 가 가 (40)

(30) (30) (47) (48) 가 (49) (46d, 46e)

(36g) 46d 46e (46g) (46f)

가 BTT

2b (9) (10), (10a), (20), (2, 2a, 3, 4, 4a, 4

b, 5) (1) (2), (2a), (CSF)

(3), (4), (10a) (4a), (4b),

(5) (2, 3, 4, 5) 1.5 cm 2.0 cm

가 (2)

(thermal buffer) (4) (3) , CSF

20%

() 가 ()

가

2b (2b) (20) 0.5% (2, 2a) 1 mm (20

a) (2b) (2b) 5

(20) (20) (1) (20) (1)

(20) (1) : 1)

2) 2c A 2b

2c (9) (6) (7) (8a, 8b)

(1) (1) (7, 8a, 8b, 9)

(9)

[illegible]

6a BTT(10) 1b
 (13) (13a) (13b)
 13) (13) 7a
 7b 7a
 7b 7a 가
 가 가
 8a 8b
 9a 9b
 (9a) (9b)
 10 (74)가
 (100) (78) (76) (100) (82)가 (78) (84)
 (84) (88) (86) (86) (88)
 (84) (78)
 (78) 가
 가
 (78) (84) / (78) RF (78)
 (72) 가 (84)
 (88) (78) ()
 가
 가 RF 가
 / (78)
 가 / (78)가
 가
 (72) (74) (72) (78) RF
 (84) RF (74)
 RF 가 AC (74) (84) MCU (72)
 (72) (74)

가 , RF
가 .

가

(78) (72) RF BTT (1),
LCD 가 (84)

(78) (84) 가

가 3 (78) (74) RF
3

11 (74), (71) (73) (72)
(100) (78) (100) (79) (Holter)
/ 가 / 가

10 11 , 가

100,000
24 가

가 가, 가

12a (104), (108) 가 (100) (106), AD (107) RF, 가 (103) (102) (110) (109) (108) 12 12b 12a (110) (109)

2) , BTT (106) (109) (102)()가 DC (10

가

가 (, LED 가)

(A/D) . DC . DC . DC DC , DC 가 (Application Specific) MEMS()

BTT () , 98.6) (ADC)

가 가 ()

RF RF RF

가 ID

(DAC)

가

DAC

39 36 가 가 가

가

(100)

BTT

(102)

3

0) 가 가 BTT (10 LED (tone) 가

4

1 3 1

/

, RTD(), (heat flux) Semit

ec 가 ET-503 104JT가

13 (120) (130) (120) (MCU)(114), (RF)(116), A/D (118), (122), (A)(124), (126) (128) (1) rfPIC12F675F((2) Microchip Corporation 가)(MCU + ADC + 433 MHz) (2) CC1010(Chipcon Corporation 가)

(130) RF (132)(, Chipcon Corporation 가 CC1000), (MCU)(134), (A/F)(136), (138), (140), (142), LED(144), (146), (150), / (I/O)(148), (152), (154) (156)

가 RF , 가 916.48 MHz 가 1 % , 318 MHz RF , ()

(chirp)

가 ISM 가 1 가 2 가 가 3, 4 가 ISM 가 2, 3 4 가 ISM

M358), LED (Op Amp) MCU , LED 가 L

14 (158) MCU(164) / (162) MCU(164) (162) (166) (162) (162) MCU(164) (162) MCU MCU(164)

BTT , BTT BTT BTT

15a (172) (176) (17) (170) (172) (170) (174) , (172) (176) 가 , (172) (170) (174) (176)가 BTT

15b (172) 가 BTT (174) (176) (17

15c (174) (176)

15d MCU(175) (172) (177) BTT (176) BTT (leaflets), BTT

15e (174) (176) 가 (176a) (172) (172) (175) (179) (ban d-aid) 가 , (thinsulate), (), (C)) (K = 0.02 W/m.

가 , BTT 가 300 가 ()가 가 , 가 , 가 (180) (100) (182) (186) (182) LED(184), LED(184) 16a 16c (25) 16b (180) (182) (181) (25) (183), (185) (187) (180) (189) (180a) (100) (180b) (180c) 16c (192)((180 b) BTT (182) (21) (183a), (183b) (187) (180c) 17 (182)가 (196) (191) (180) (180) (195) (196) 가 (197) 가 (196a) (180) (182) 가 (196a)

(197) LCD가 LCD(19) LCD(19)가

18가 (199) (200)

(180) (100)가 (170) (199) 2

0 cm (180) (174) (201) ,가 (182) 10 cm (199)

19a1 19d (180) (182) (180)

19a1 (180) (180) (182) (180)

(182) (182) 12 mm , 8 mm ,가 5

z mm (182)가 (180)가 2.5 mm x x

11 mm ,가 6 mm ,가 (182) (182)

가 , y 가 , x (18

2) 가 (18

, BTT

19a2 (182) (11)

BTT 2.5 mm x

(182) (pinpoint)가 ,가 ,

가 ,

가

19b (182) (180) 19a1

x z (182) 19d (180) 19a1

(15) (15) (15) (15)

15a), (27) (15b) (15c) (ASIC) 19a1 x가 x

d 가 (180) ,

BTT

20a 20c x가

(180a) (182a)가 (182a) 20a 11 mm ,

mm .가 (180a) (182a)가 (180a) (182a) 20b 6

20c 2.5 mm

(184) (182)가 21a 21b (180)

(184) (182) (21b). , 21a ,

(180) (182) (184)

22a 22c (206) 22a (204) (100)
 (208) (204)가 (206) (212) (202) (202) (

210)

22b (202)가 (216) LED(228, 230) (204)
 (224) (100) (222) (222)
 (220) (222, 224) (216) (222) 가
 (222a) (226) (204)가 BTT
 , LED(228, 230) (204) (232) 가 , BTT
 (202) BTT
 , LED(228) , LED(230) , LED(228, 230) 가

22c (202) (204) (100)
 (202) (236) (234)
 (238) (234)

23a 23b (244) (242)
 23a (240) (241) (242), (250)
 (246) (248), (254) (252) (244)
 (242) (240)
 (243)

23b (240) (258), (262) (260),
 (266) (264) (256)
 (258) (258a) 12 mm
 가 (240)

24 (262, 264)
 (260) (268) (268) (261), (263),
 LED (265), (267) (267) (268)
 (269)

25 (272) (270) 가
 (274), (276), (278), (282),
 (283), (284) (286) (274, 276, 278, 282, 284, 286) (280)

26a (292) (290, 289) (299, 300)
 (292) (293) (295) (296)
 (288), (294) (296) (293) (298)

26b (292) (293) (295) (294),
 (288) (296) (292) (294)
 (, 9 mmol/L) (296)
 (290) (300) 36.7 (98)
 (298) 가
 , LED,

98) (293, 297) 가, (293, 297) (292) (296, 2)

27 3 (304) 가 3

(301) (303) (301a) (301b) (302) (302a)

(302b) (303) (303a) (306)

(303b) (303) BTT (308)

(303) 가 3 (304)

(303) (303) (303) (310) (312)

(306) (308) (303)

(303)

28a (316) 가 (314)

(318) (311) (318) (320) (322, 324) (313) (314) (326)

(318) (311) 가 (322, 3)

24) (322, 324)

28b (314) (328) LED LED (329)

(323, 325), (328) (326) (316) (314) (314)

(329) (329) (330), (332) (316), (314)

(328) (328) (314) (320) LED,

(314) LCD / RF 가

29 (clip-on)(340)

(338) (342), (344), (346), BTT

3 (349) (348) (350) (348) (340)

30 (354) (352) (361, 362) (354)

(356), (358) (360) (360) (, LE

D) ()

31a (366, 376) (364, 365)

(380) (380) (380)

(371) (368) (368) (369) (370)

(365) (380) (365) (363) (376)

(363) (374) (372) (376) 31b (376)

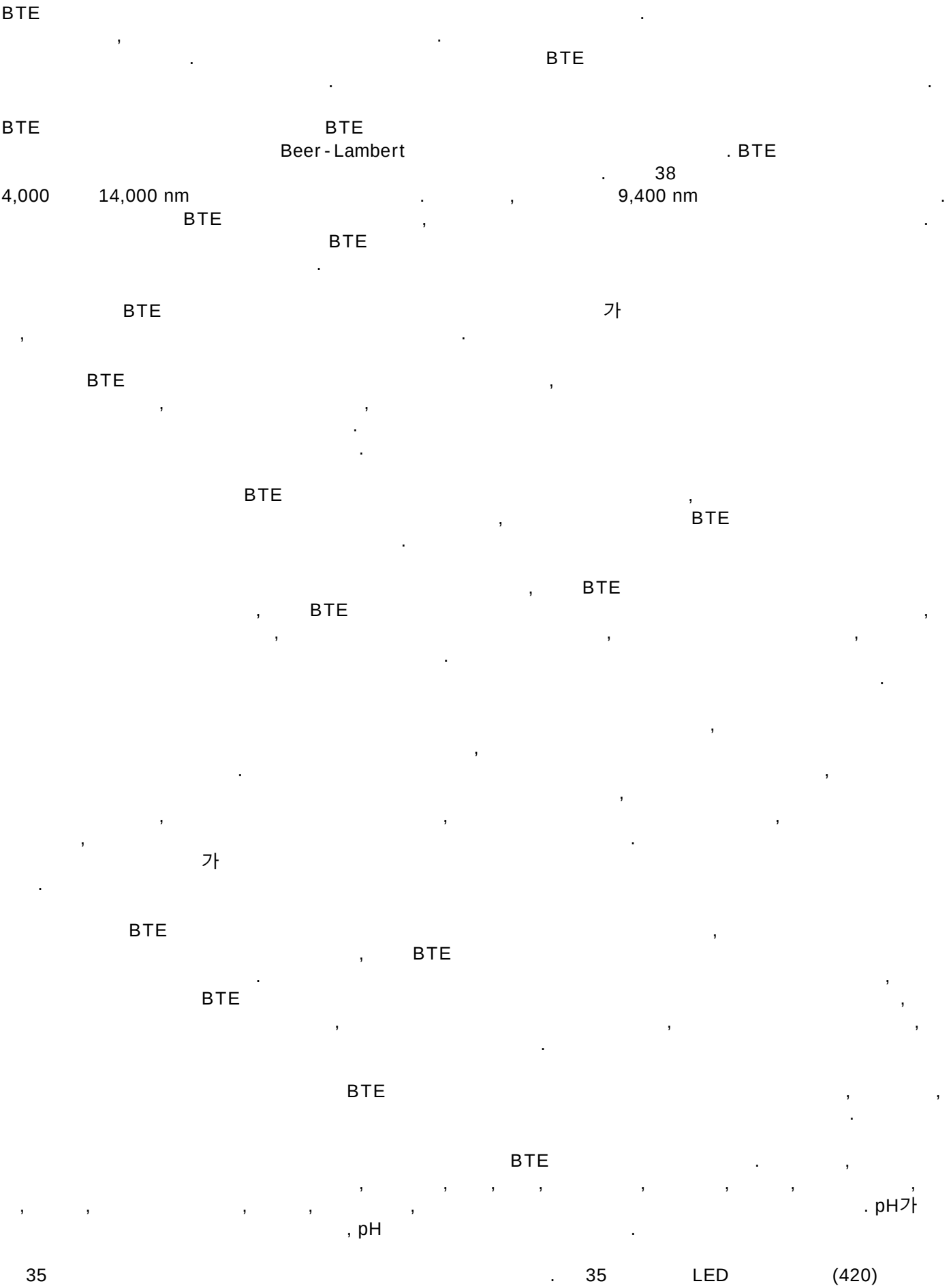
(365) (380) 31c (366)

(366) 31d (366) (365) (3)

82)

[illegible]

가



(428) E (422), (426) BTE (430) (424) BTE (430) (BT
(428) (420) (432) (425) (425) (422) (424)
(432) (428) (424), BTE (430) (428) (424, 425)
(432) (432)

LED(LED) 가
(420)
(432), 750 3000 nm (4
24) 400

36 (434), (436), (43) 8) (100) (436) (438) (436) (438) (440) (442)
(436) (438) (434) LED 가, (436)
(438)

(434) 가 , 가
(cardiac output)
()
. BTE

37 BTE (448) (444) (450) 37 (44 6) (448) (450)
BTE (454), BTE (454) (454) (450) (456, 458) (448) (462)
(453) (462) (460)

, 38 BTE (454) (pyrane ring) , 9,400 nm
(453) (453) (45) 2) (464) (453) (444) (464)
) (464)

(oximeter), (hema
tocrit), 가

BTT (478) (476)가 BTT (470) 38 (470)
(100) (472)가 (470) (472) (478) BTT
(476)

(tongue-groove)

. BTE

, 39

BTE

(Seeback) BTE

(emf)

, 39 (T1)

(T2)

가 (1b

B(472)

(T1, T2)

A(470)

A(470)

B(472)

)

가

(

$$U = (Q_a - Q_b) * (T_1 - T_2)$$

(

Q_aQ_b, T₂A B₂

(

)

, T₁ BTE

(474)

, MCU(476)

BTE

가

, BTE

BTE

가

가

BTT

, 40
(480)
486)(482)
(101)

(480)

(484)

, BTT
(101)

(

(484)
GPS

(489)

, GPS

(480)

가 가

, (489)

가

가 GPS

GPS

(484)

, GPS

41a
(490)(492)
(17)가

BTT

(492)

(494)

(490)

(494)

(492)

)

41b

BTT

(498)

(500)

(496)

(496)

(498)

(105)

. BTT

(496)

(498)

(500)

(500)

37

(498)

(492)

(493)

(499)

, BTT

BTT

가

가

(57)

1.

가

2.

1

3.

1

가

가

가 11 mm

4.

3

6 mm

5.

4

3 mm

6.

1

7.

6

가 11 mm

8.

1

9.

1

10.

1

11.

10

12.

1

10	13.	,	,	.
1	14.	,	.	
14	15.	,	.	
1	16.	,	.	
1	17.	,	.	
1	18.	,	.	
1	19.	,	.	
1	20.	,	.	
1	21.	,	.	
1	22.	,	.	
1	23.	,	.	
23 가	24.	,	,	,
1	25.	,	.	
25	26.	,	.	
10	27.	,	,	,
	28.	,	.	

29.

28

30.

28

31.

28

32.

31

33.

34.

33

35.

36.

35

37.

38.

가

가

가

(wrap around ear device)

가

38 39. 38 40. 38 41. 38 42. 43. 44. 43 45. 46. (irradiating)

가

47.

46

48.

46

49.

가

50.

51.

(thermoelectric)

52.

53.

54.

53

가

55.

53

가

56.

57.

(fitting)

58.

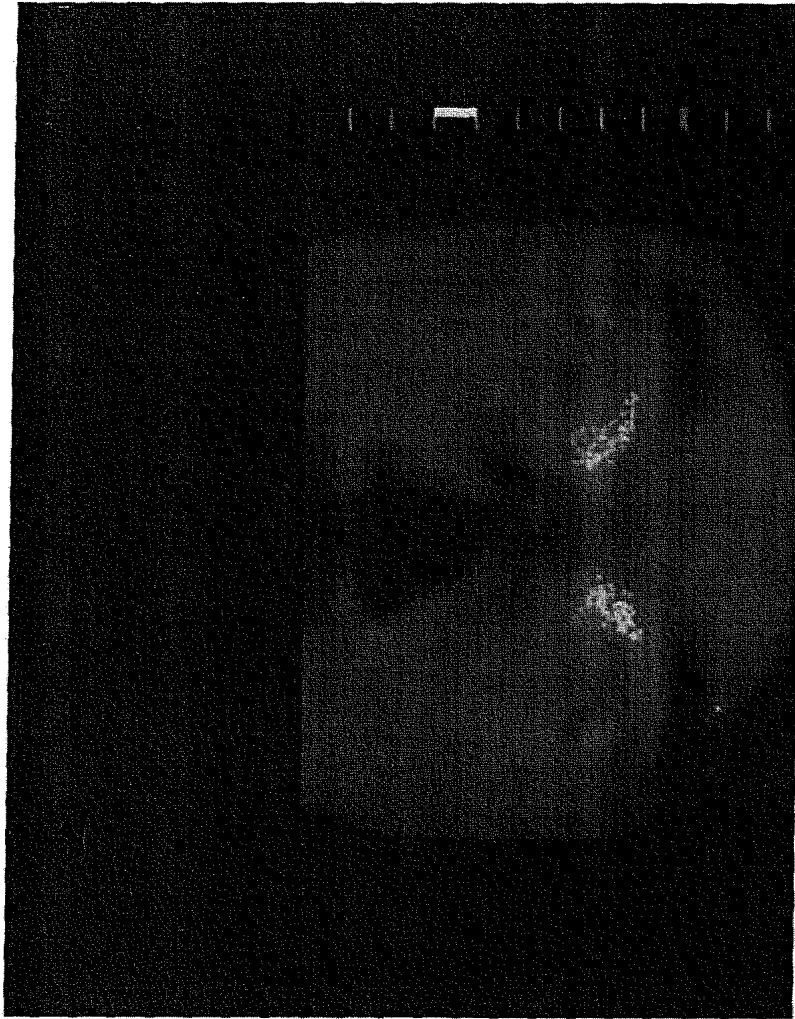
가

59.

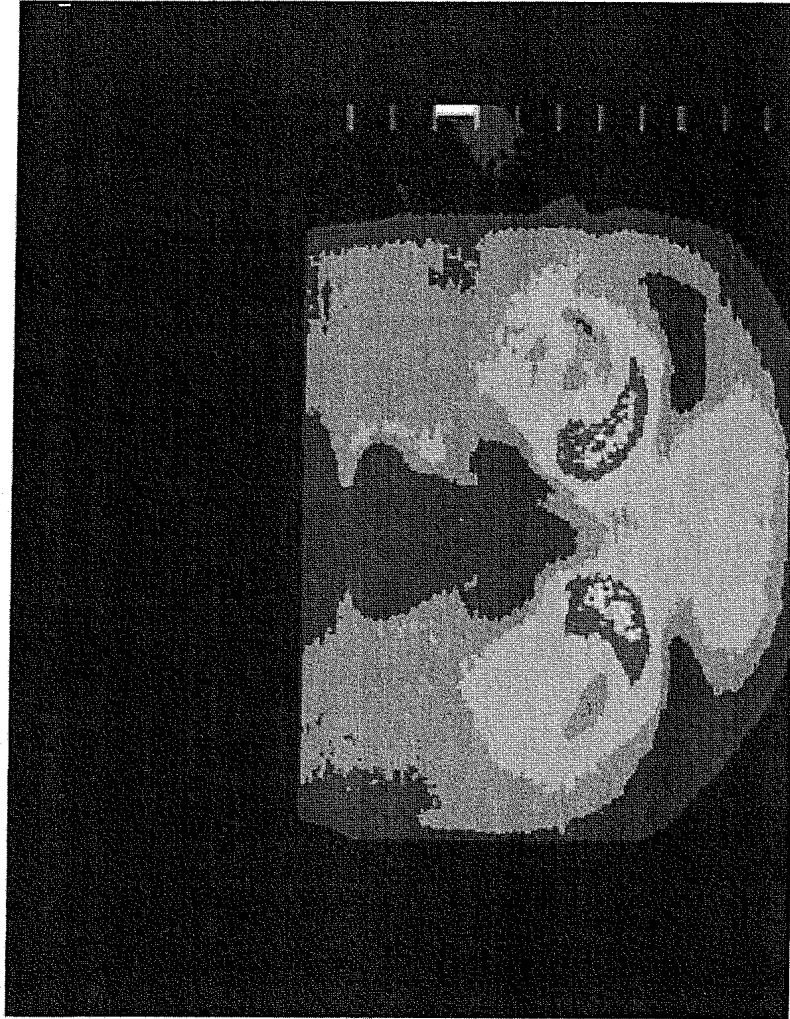
60.

가

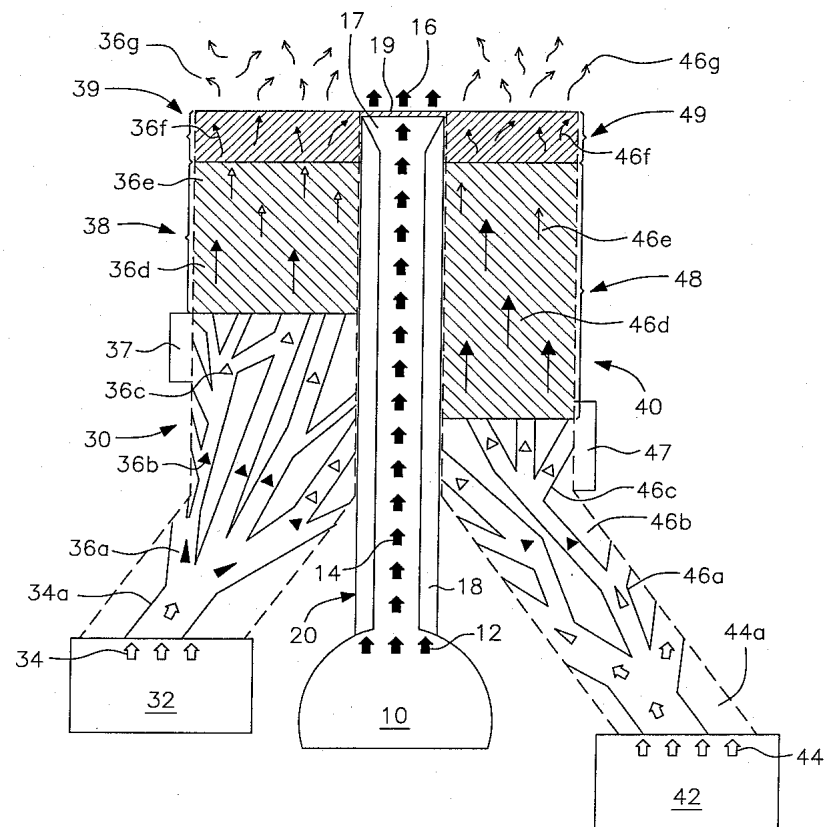
1a



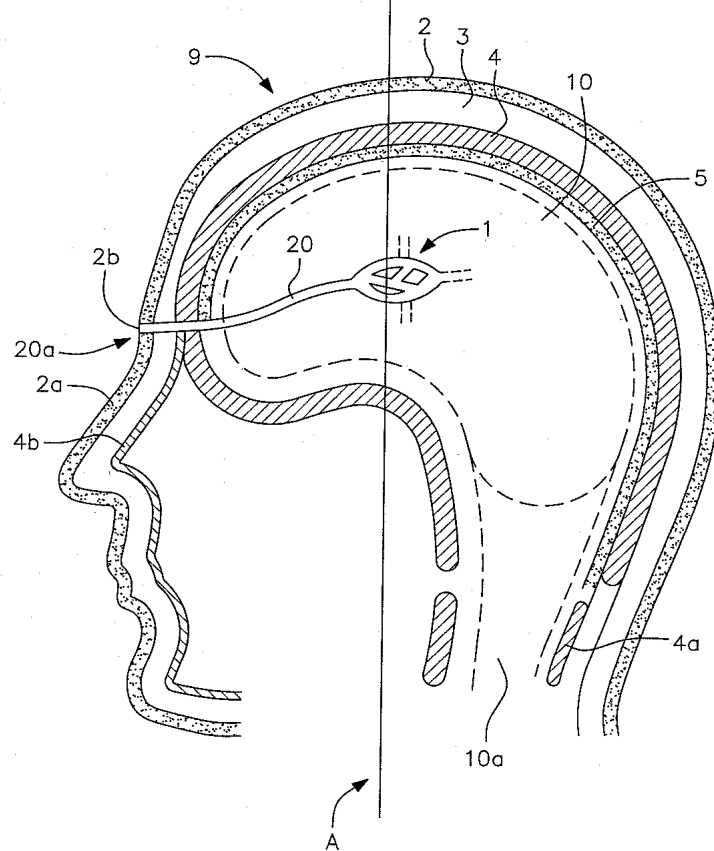
1b



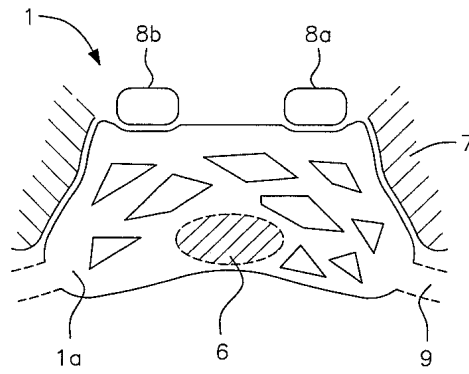
2a



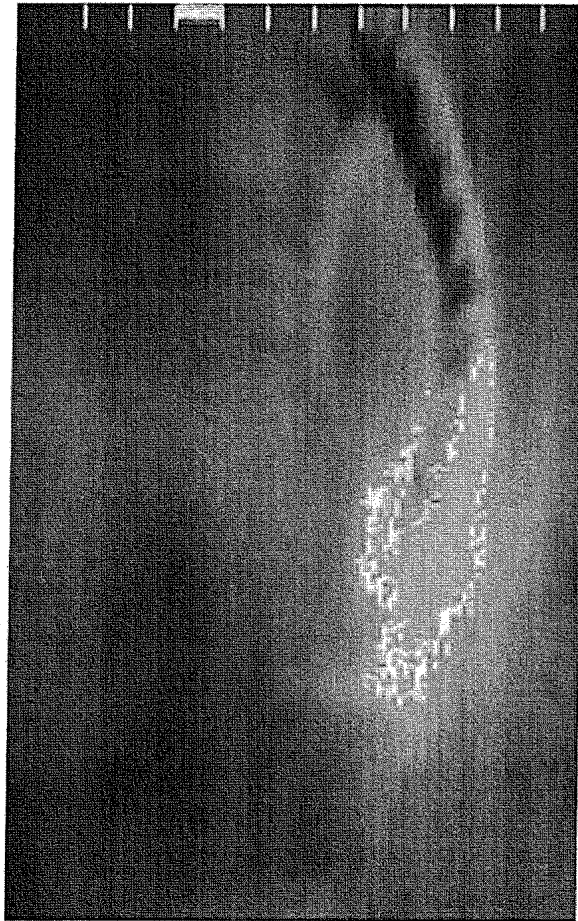
2b



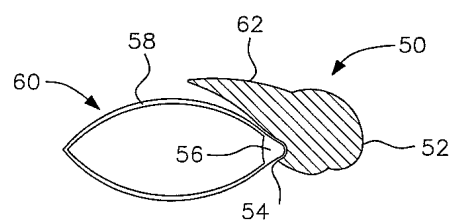
2c



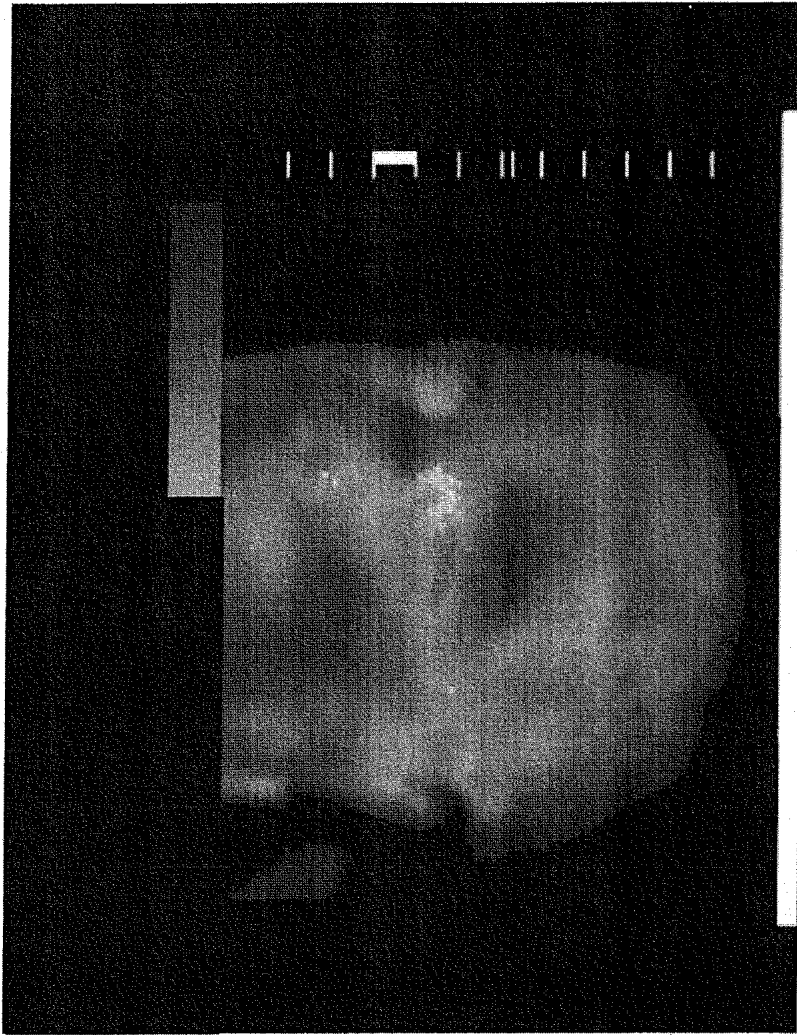
3a



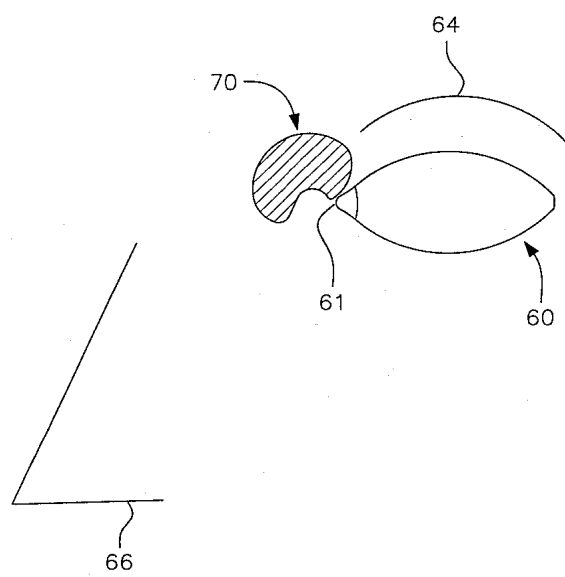
3b



4a



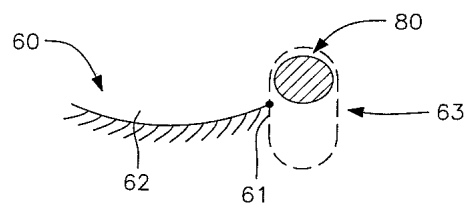
4b



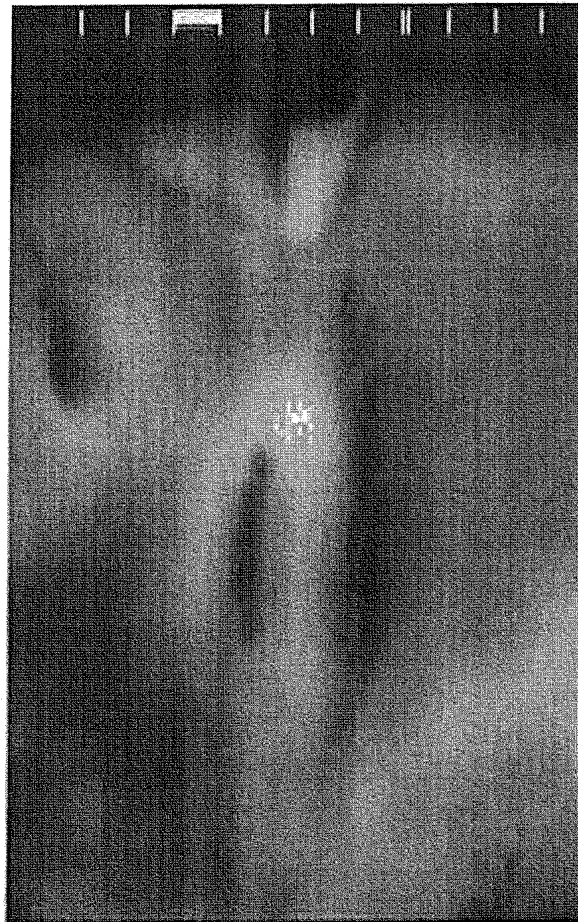
5a



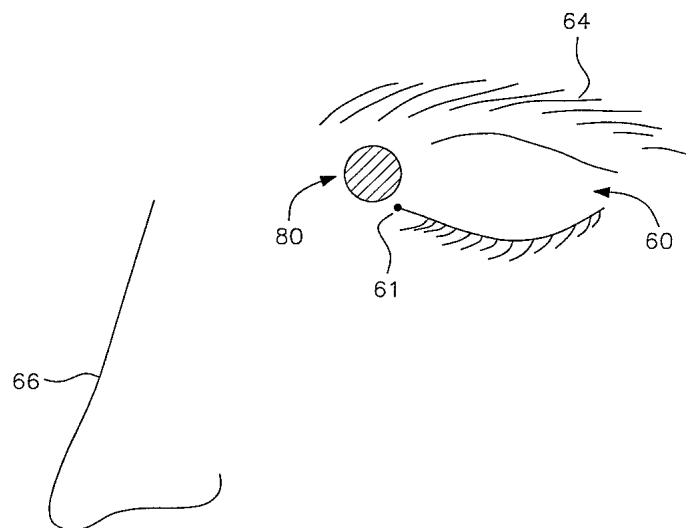
5b

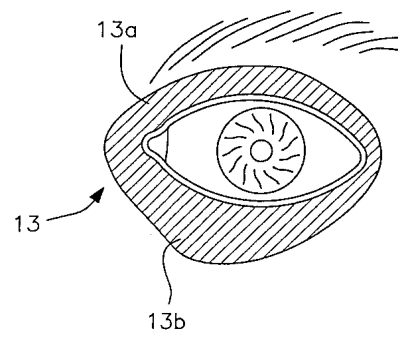
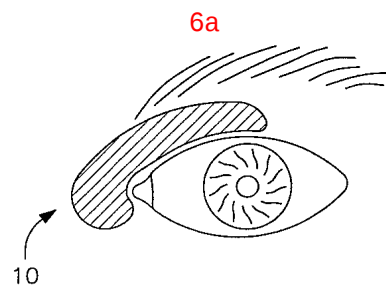
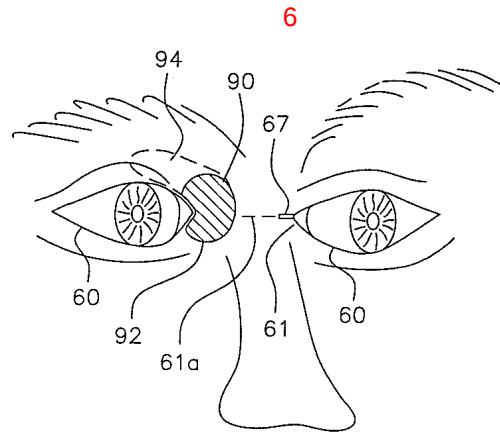


5c

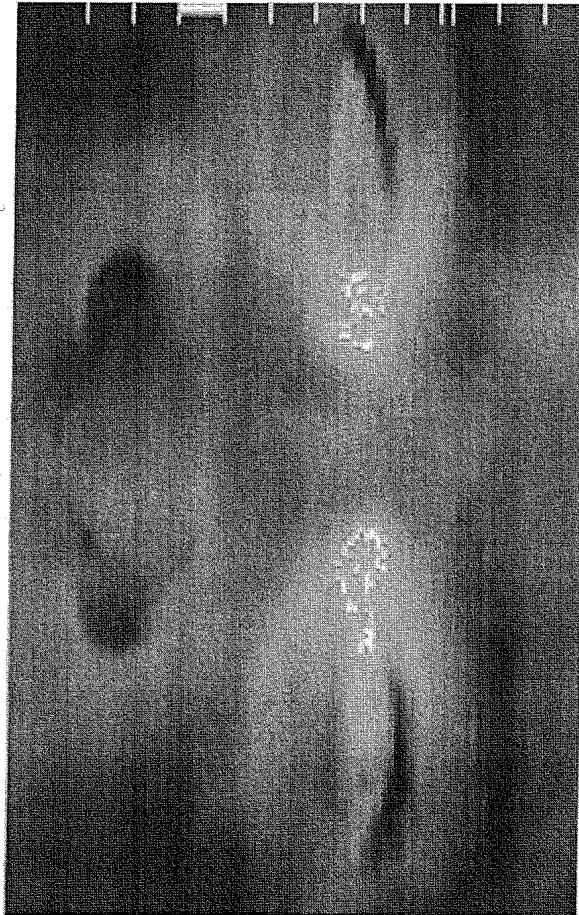


5d

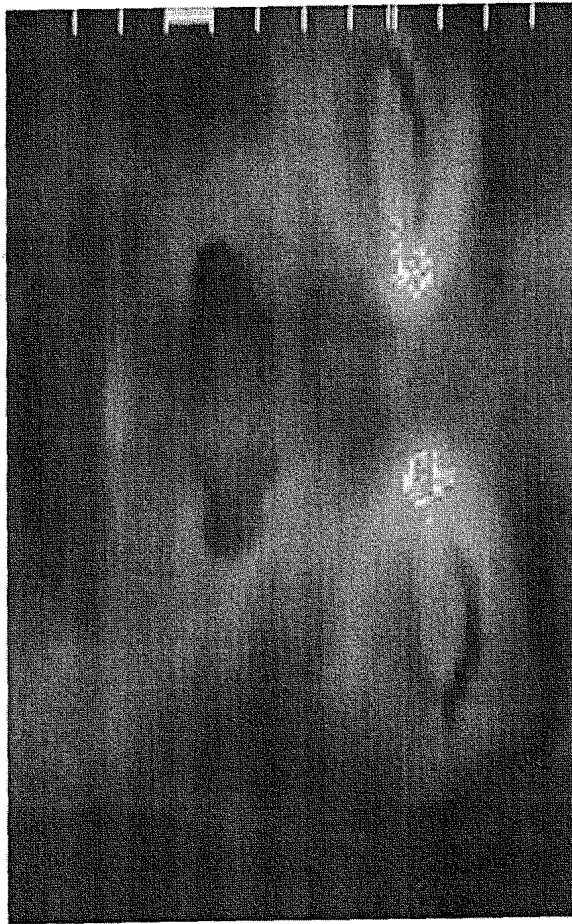




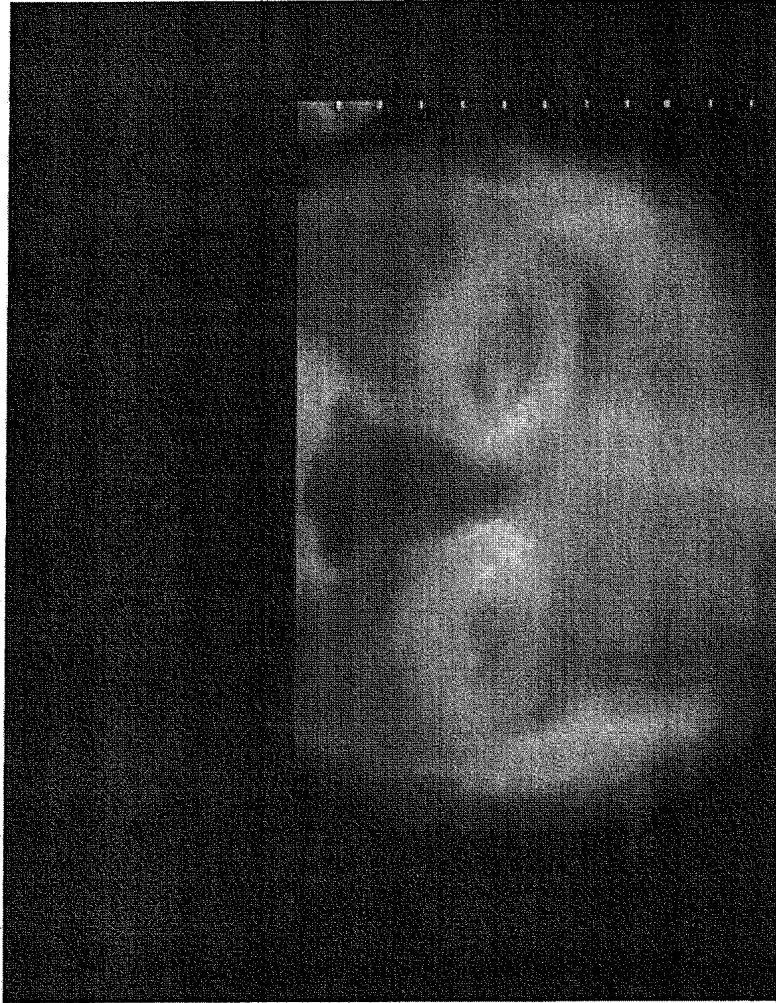
7a



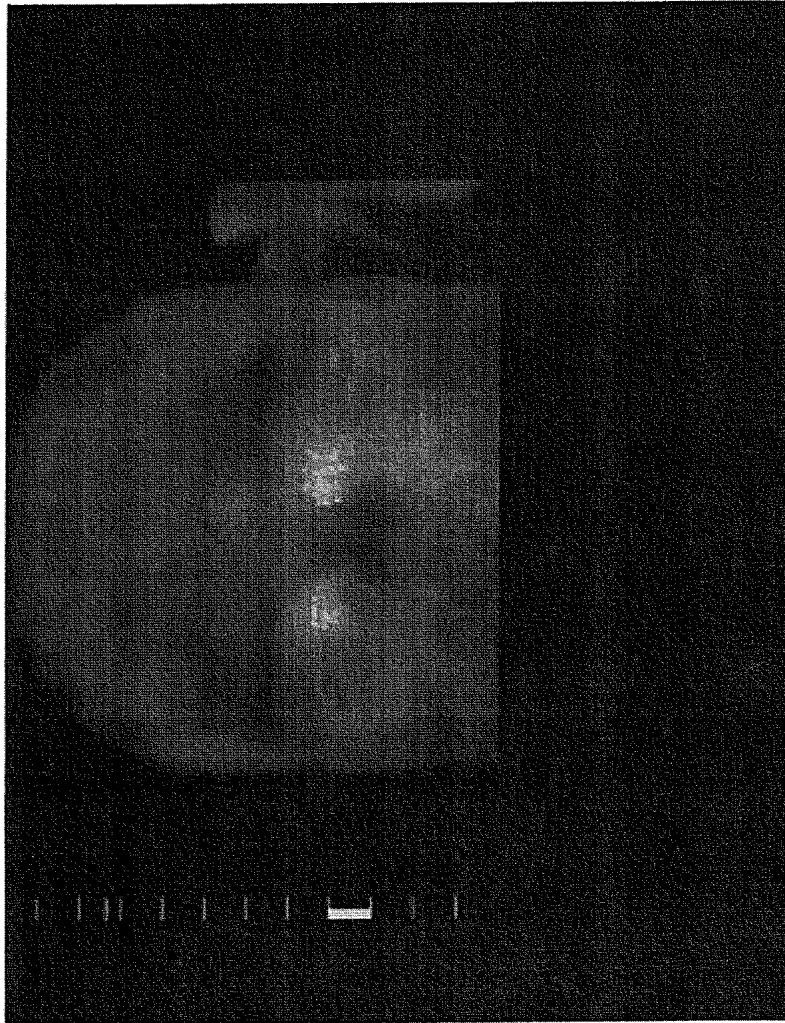
7b



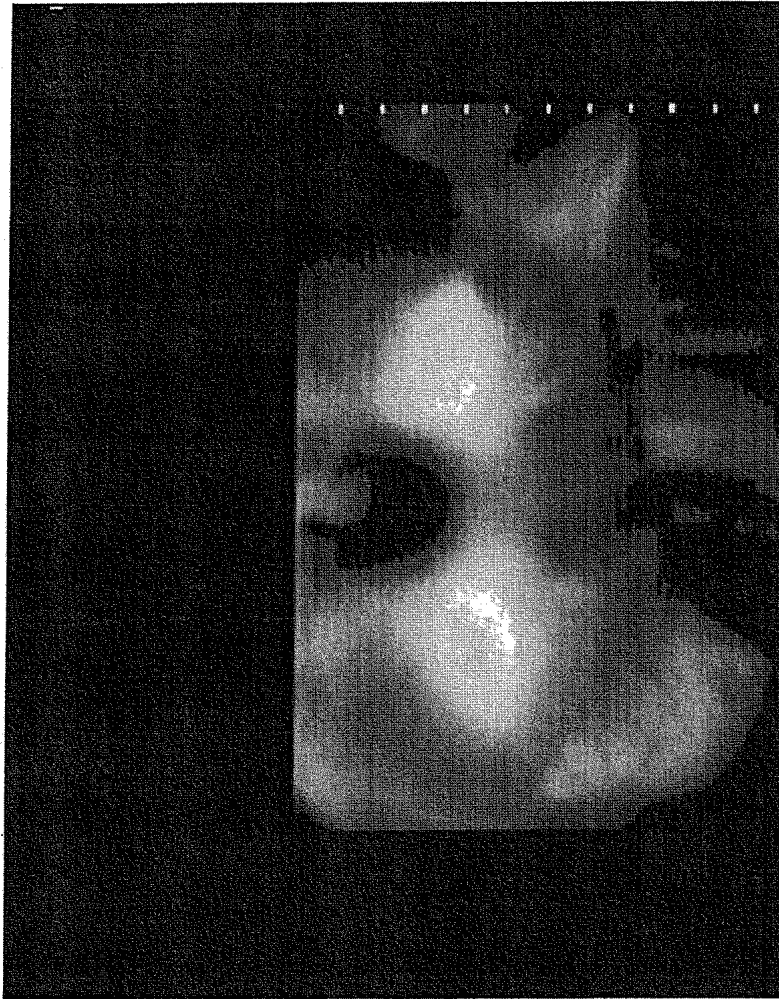
8a



8b

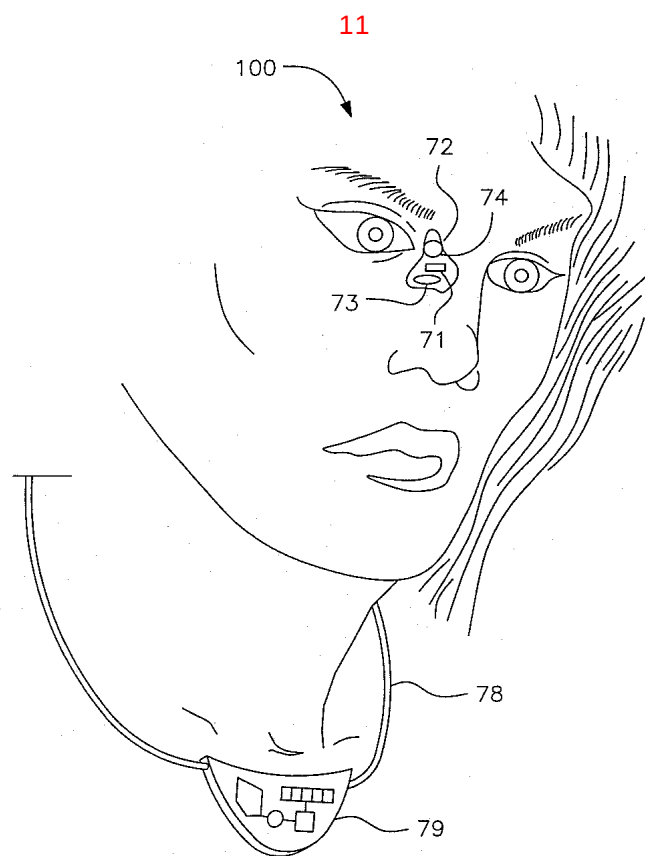
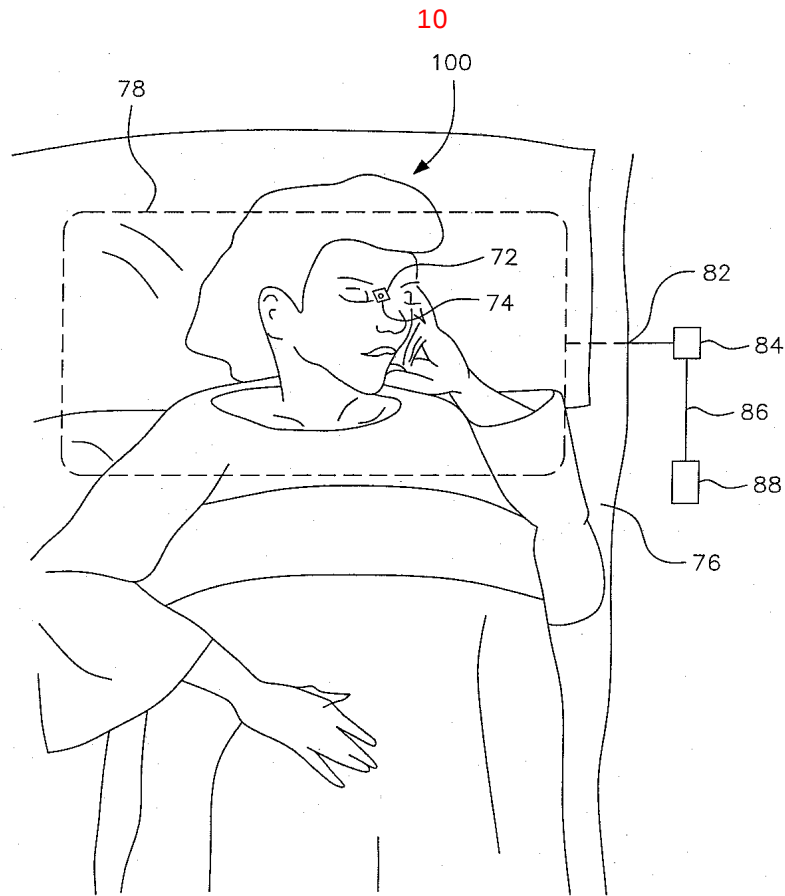


9a

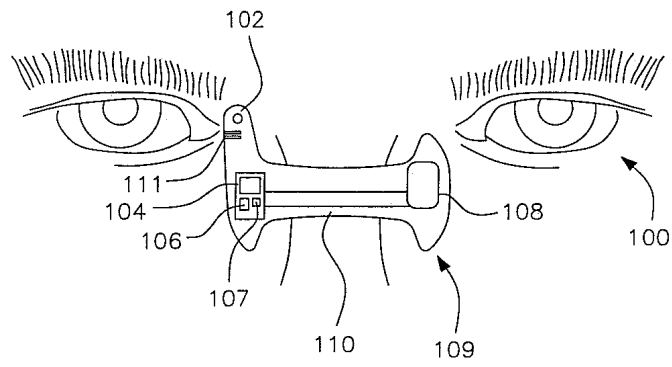


9b

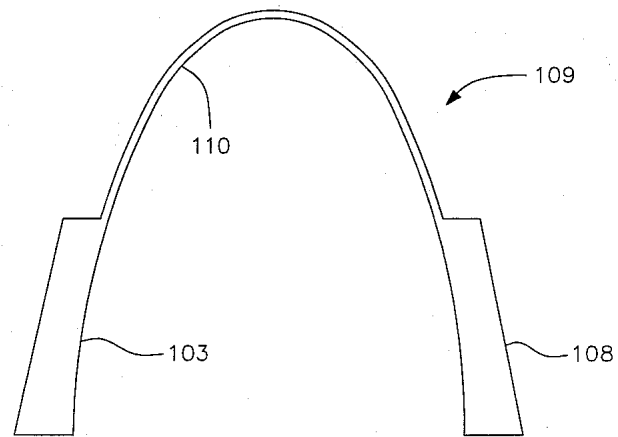


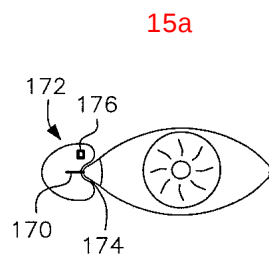
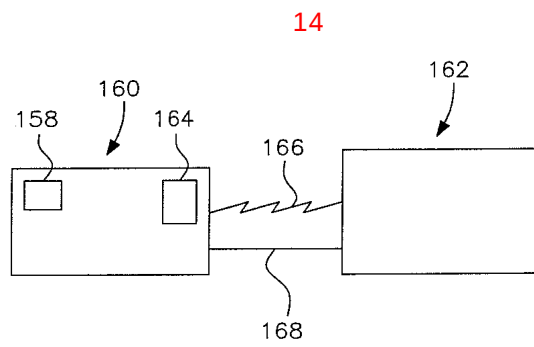
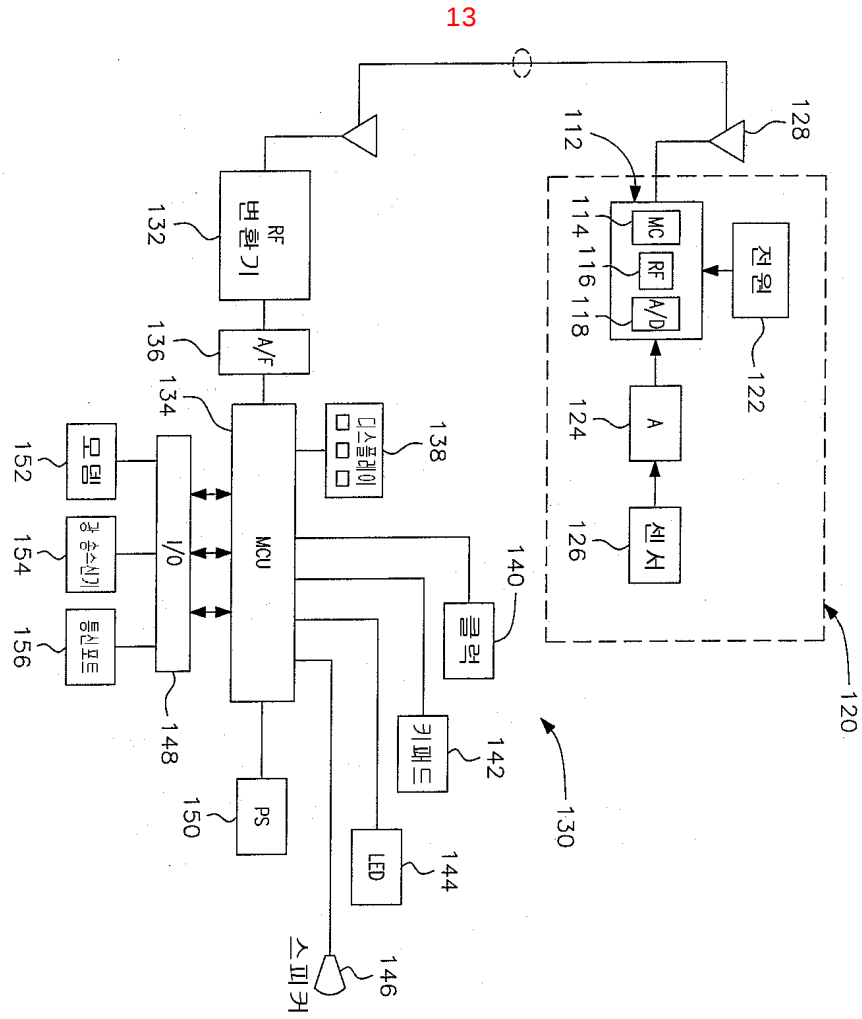


12a

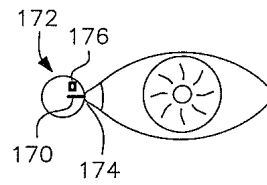


12b

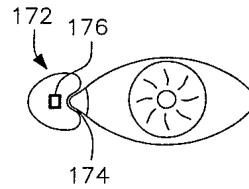




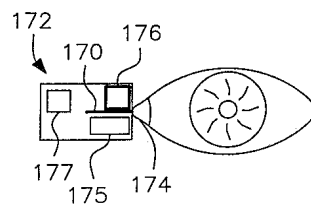
15b



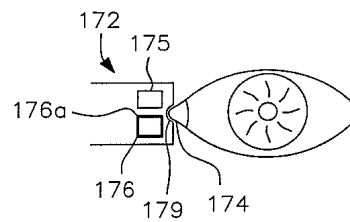
15c



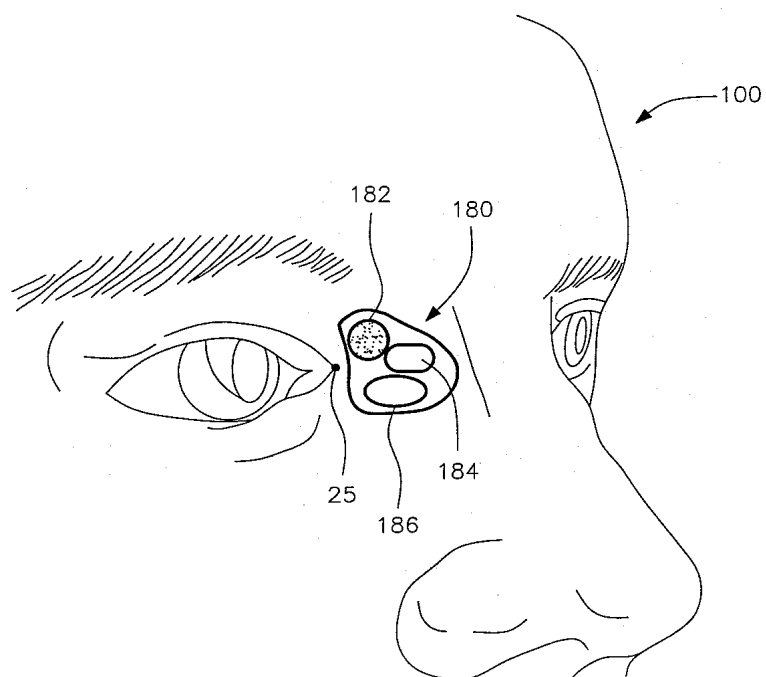
15d

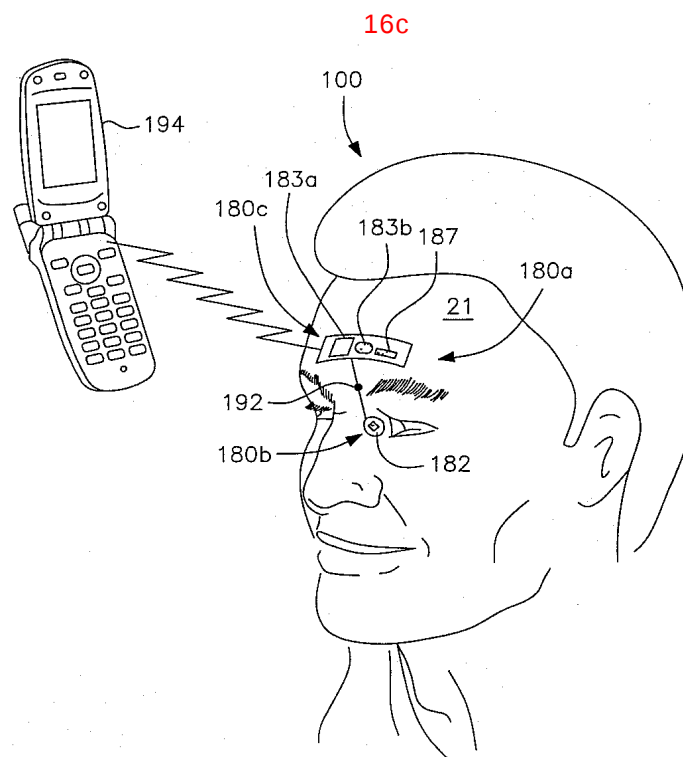
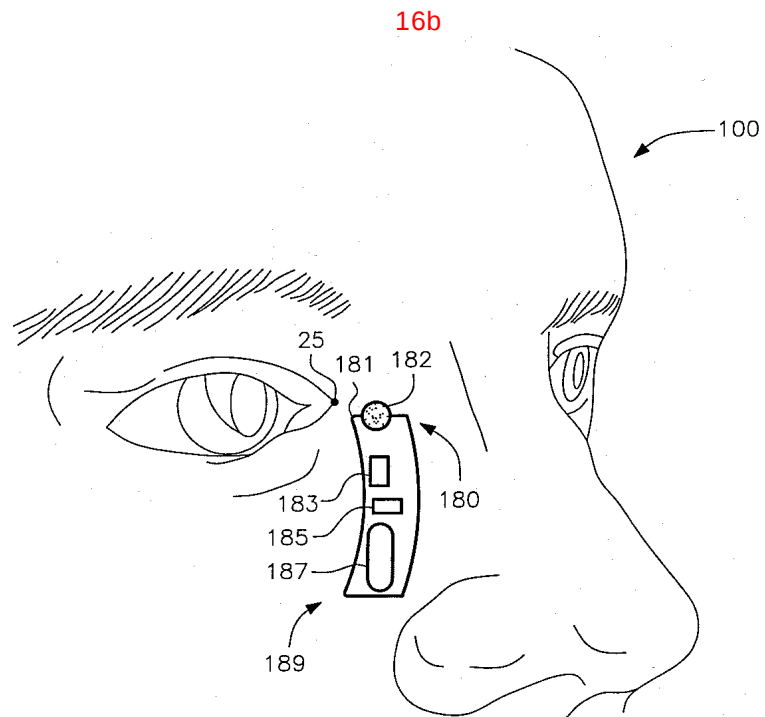


15e

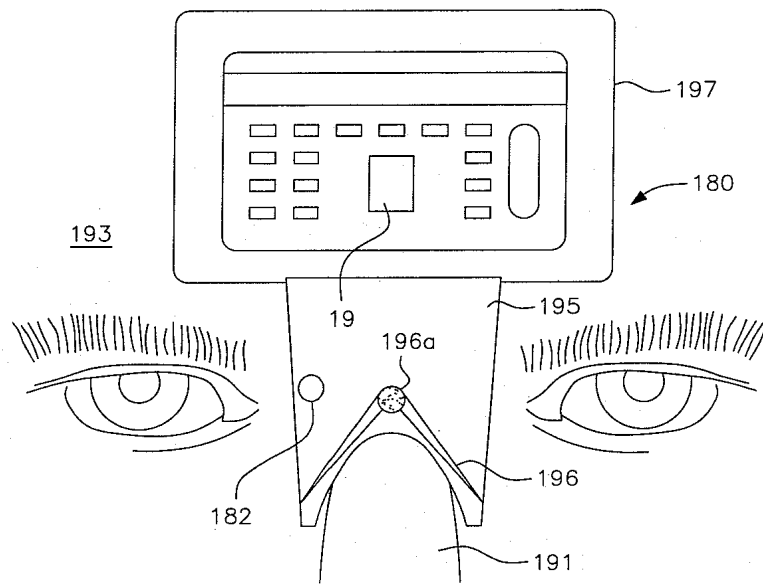


16a

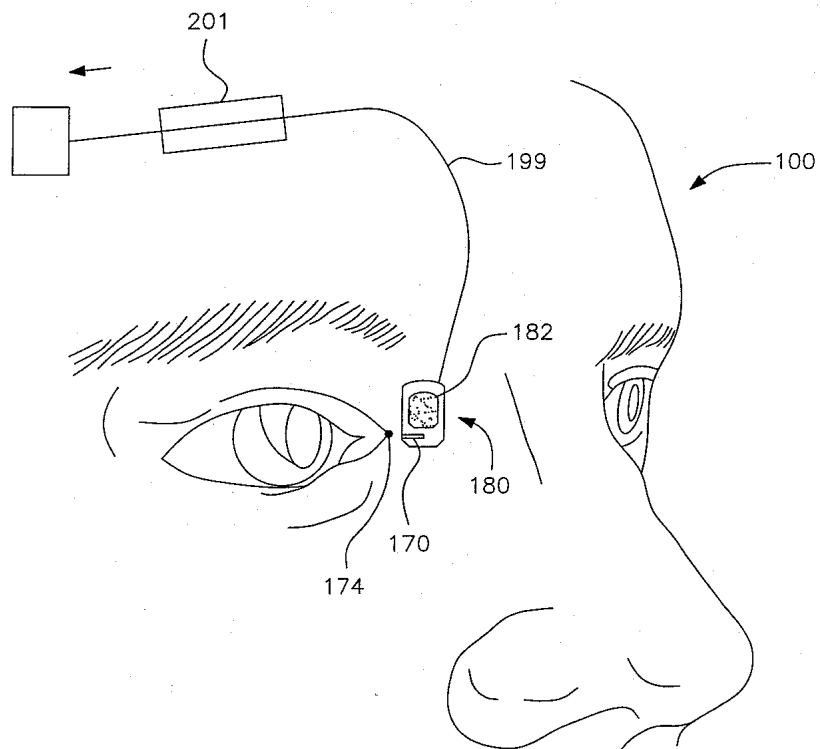




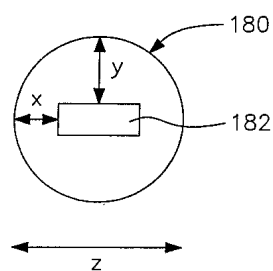
17



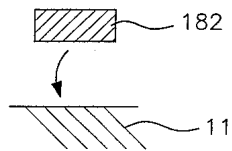
18



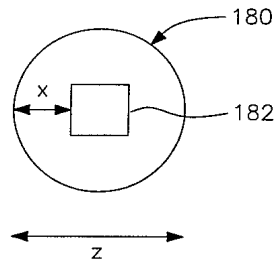
19a1



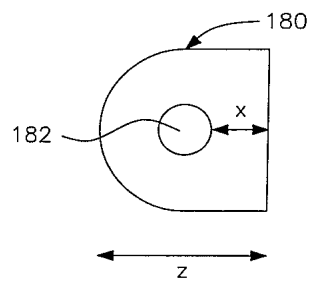
19a2



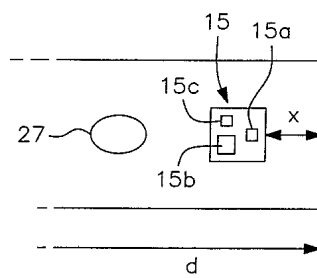
19b



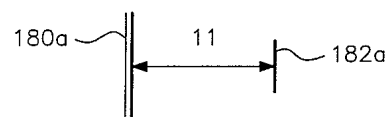
19c



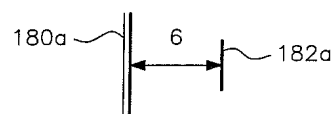
19d



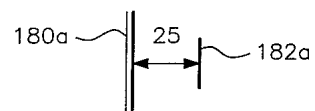
20a



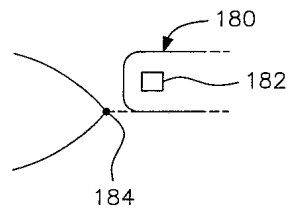
20b



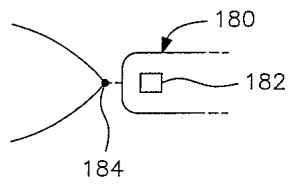
20c



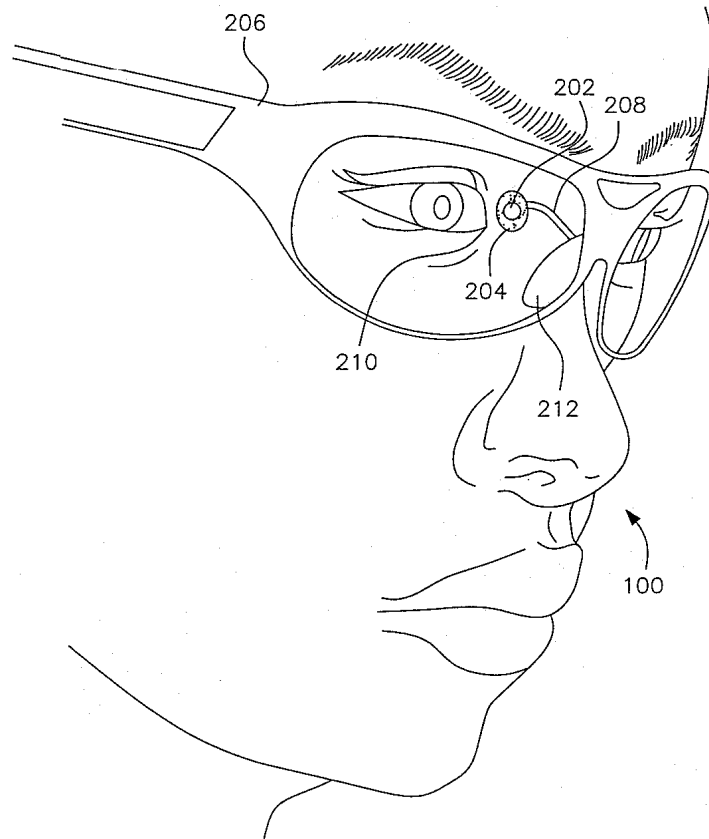
21a



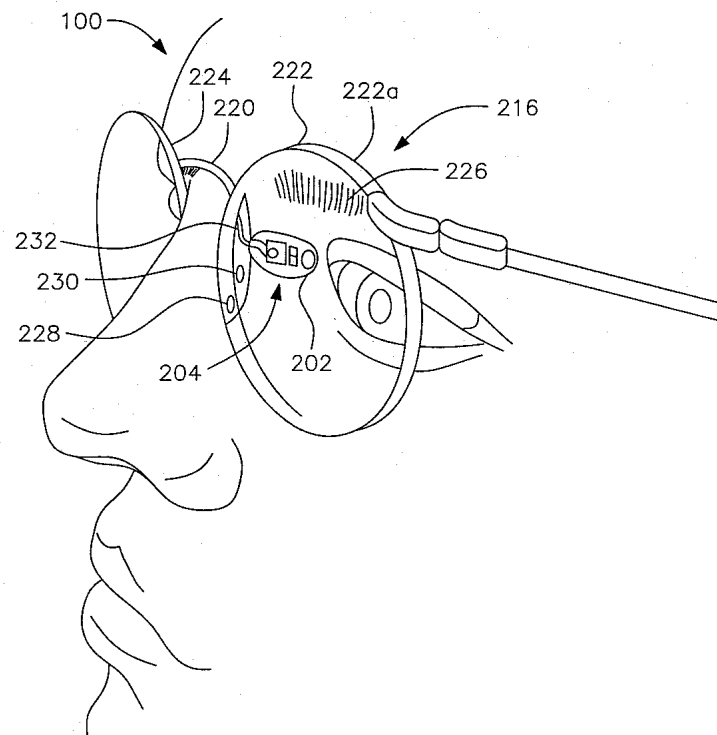
21b



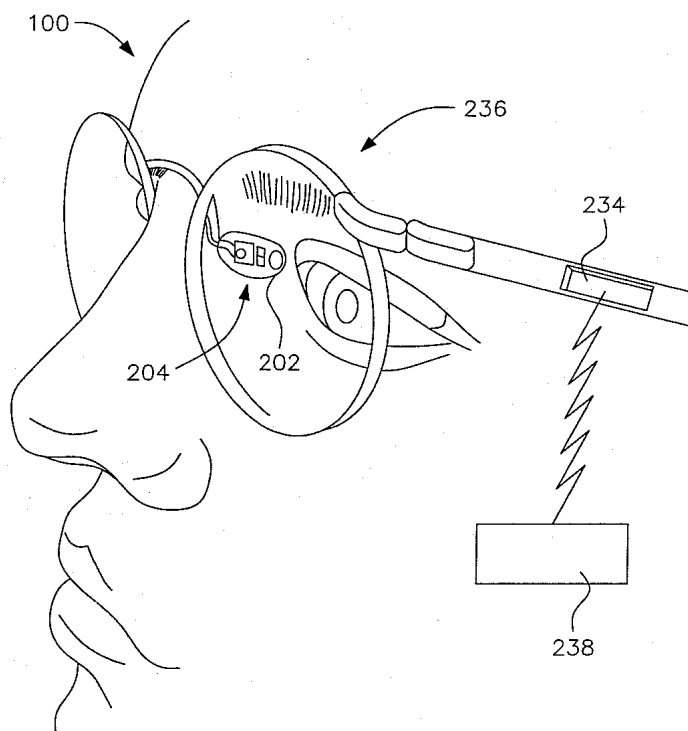
22a

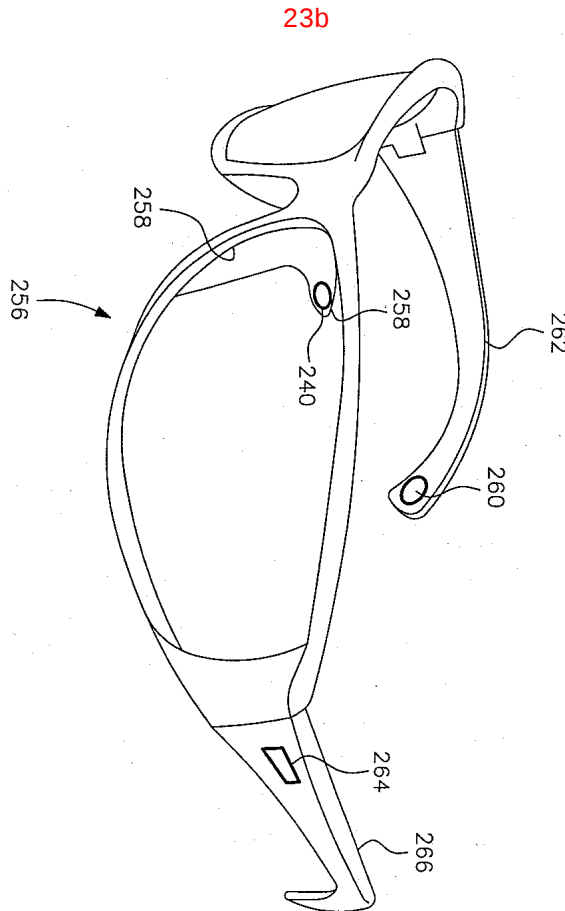
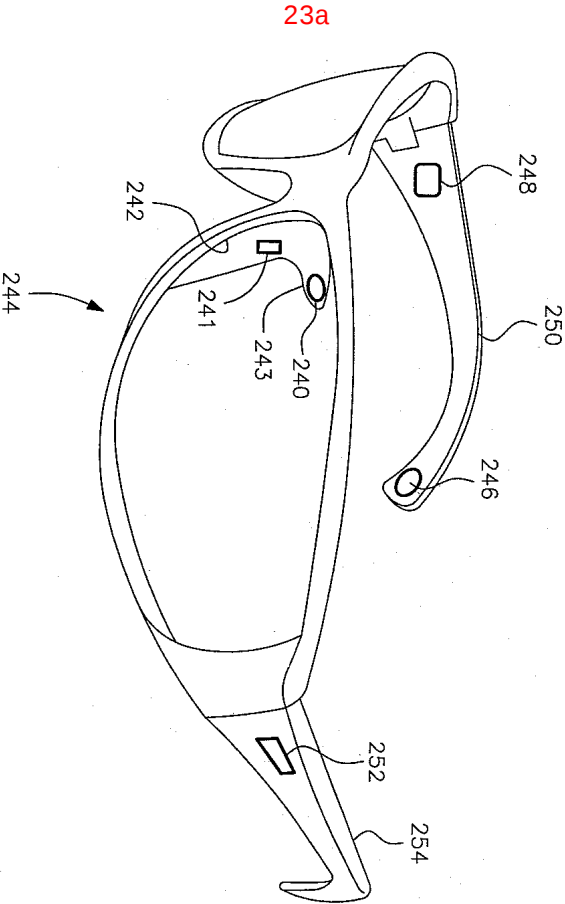


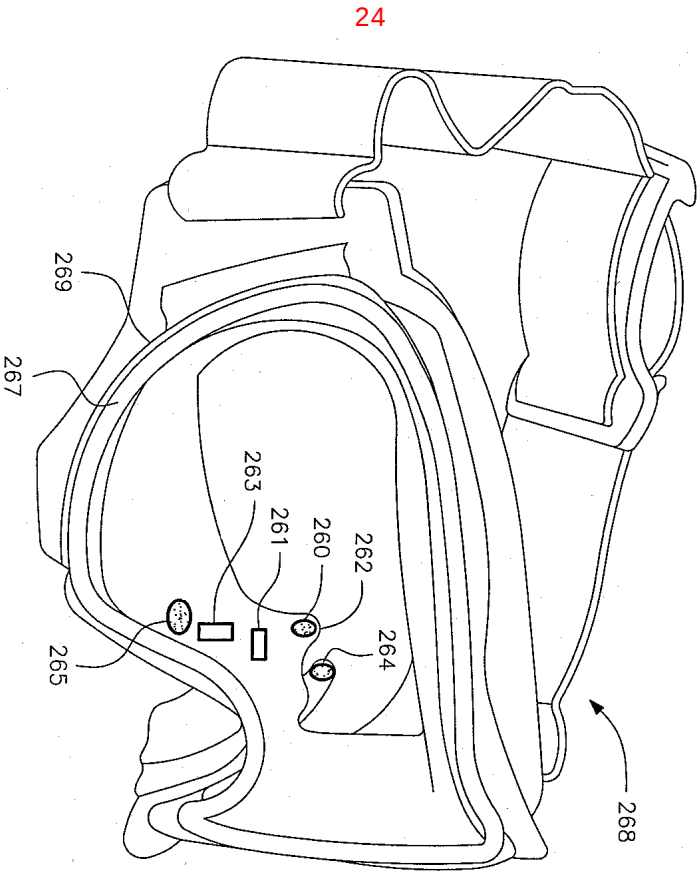
22b



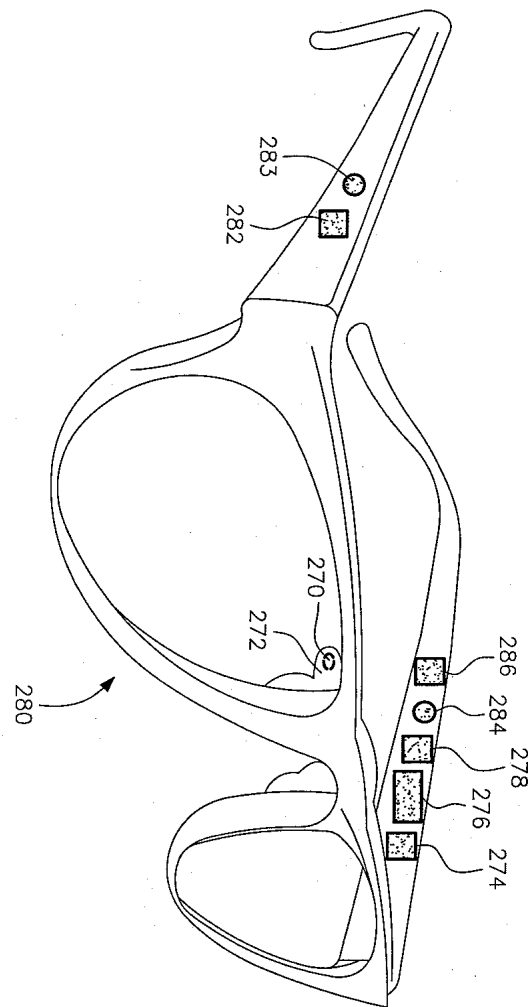
22c



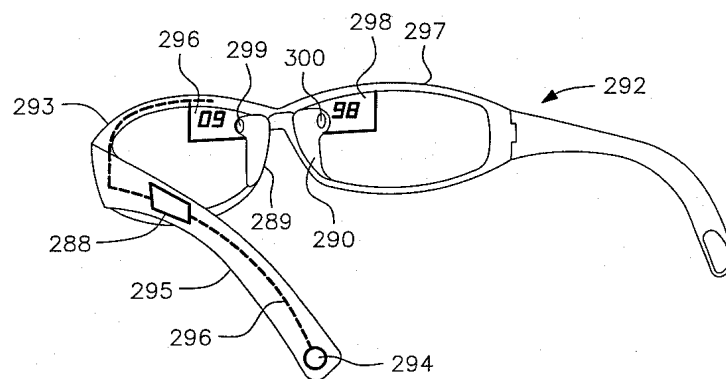


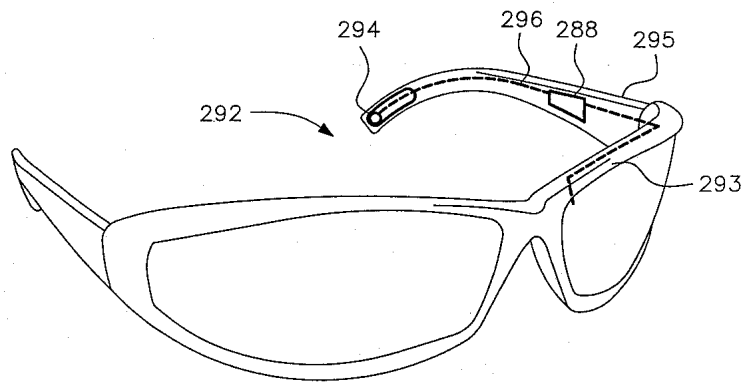
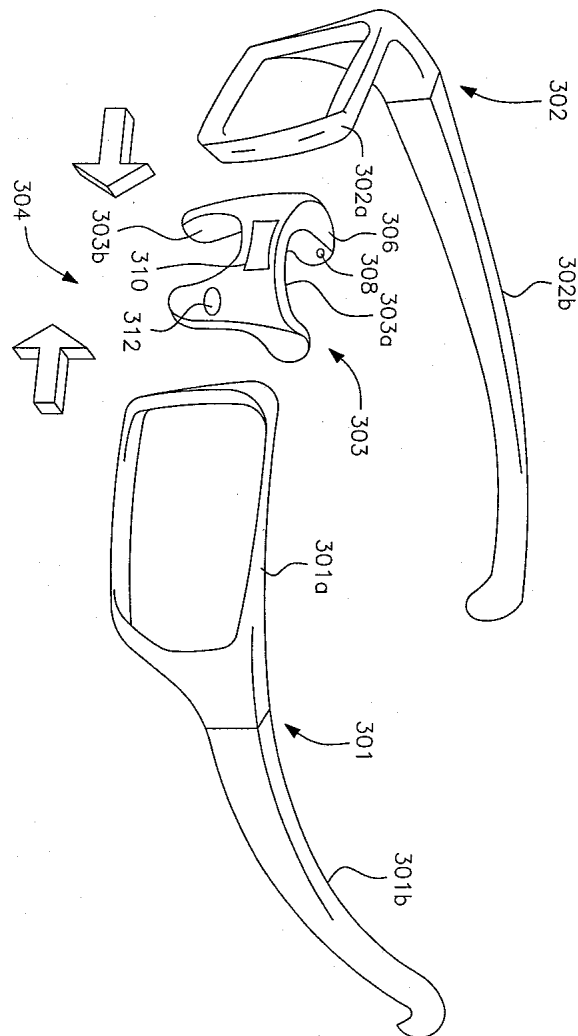


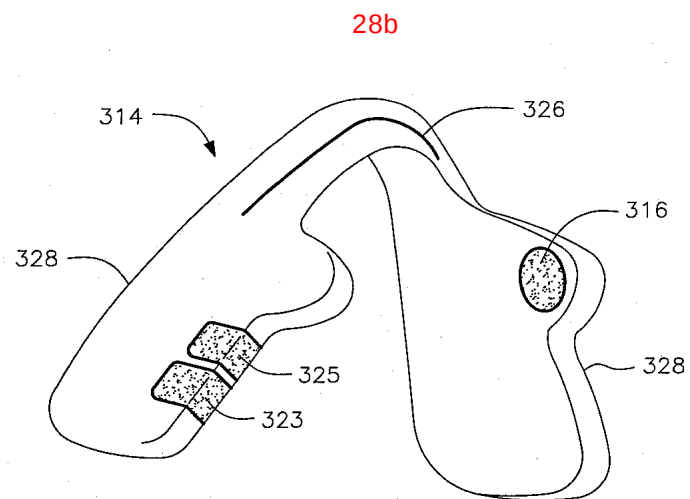
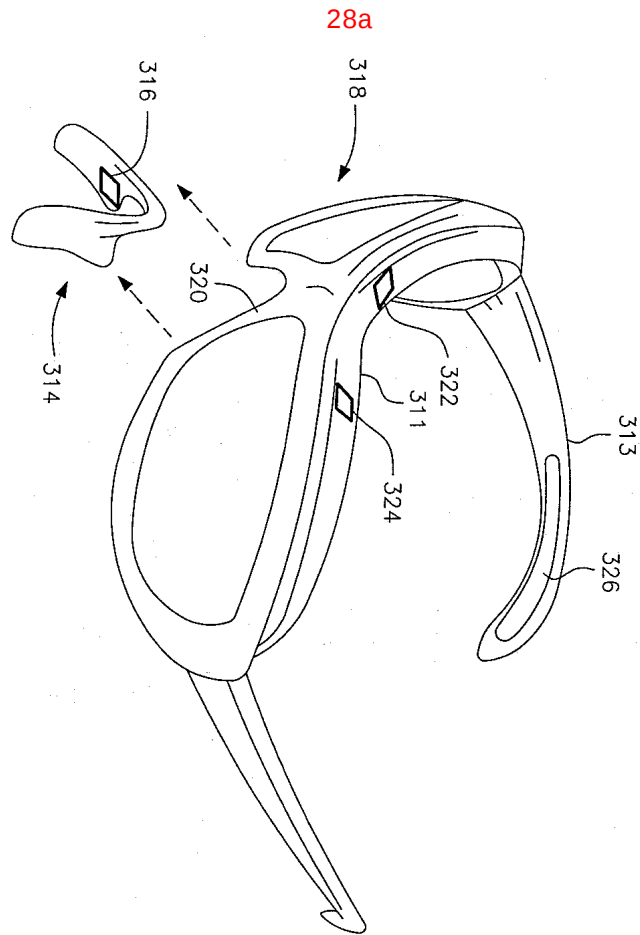
25



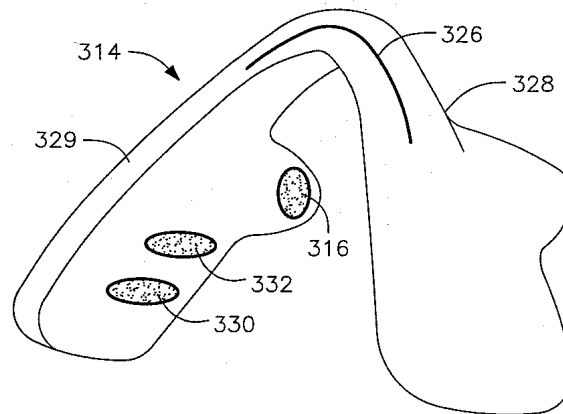
26a



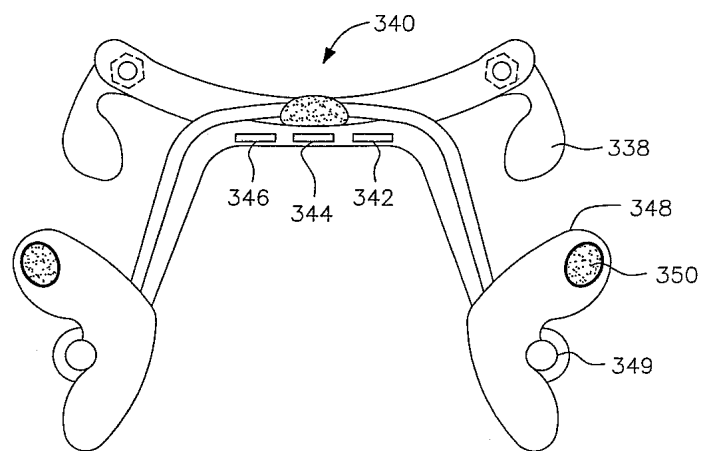
26b**27**



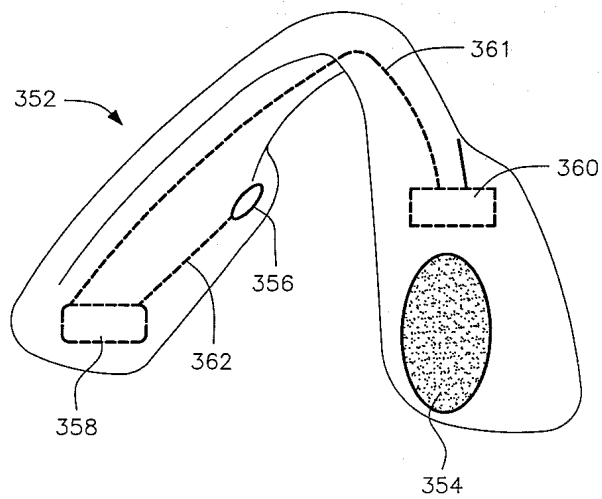
28c

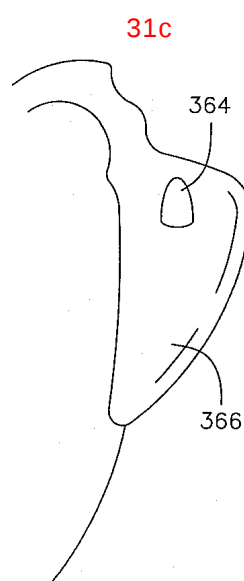
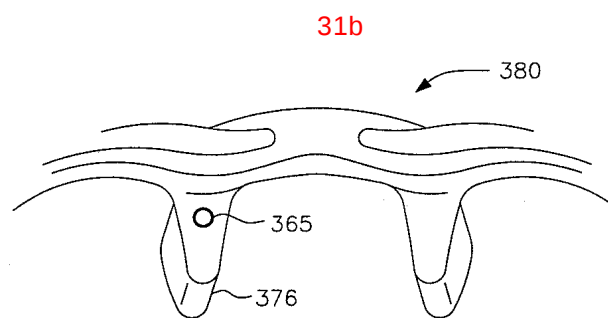
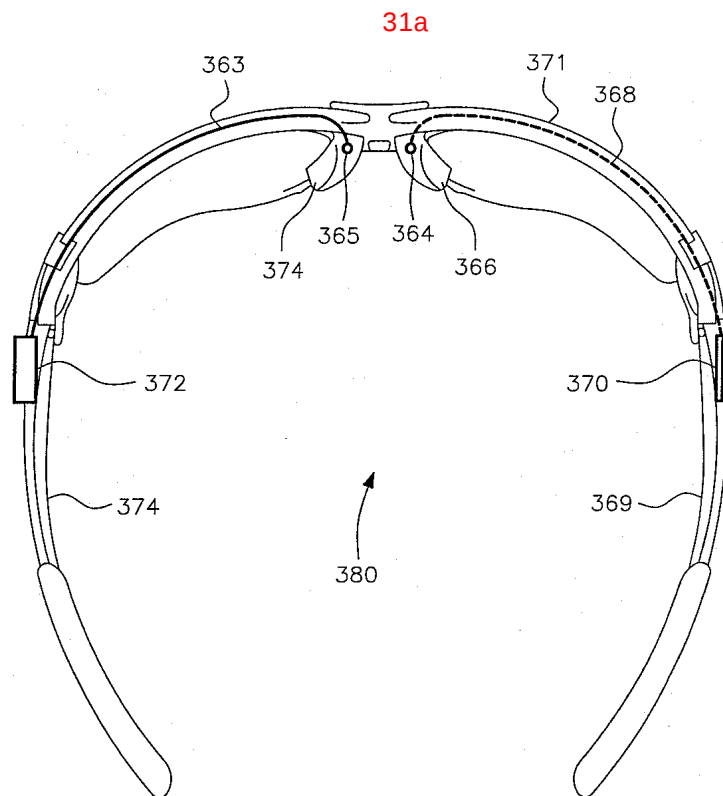


29

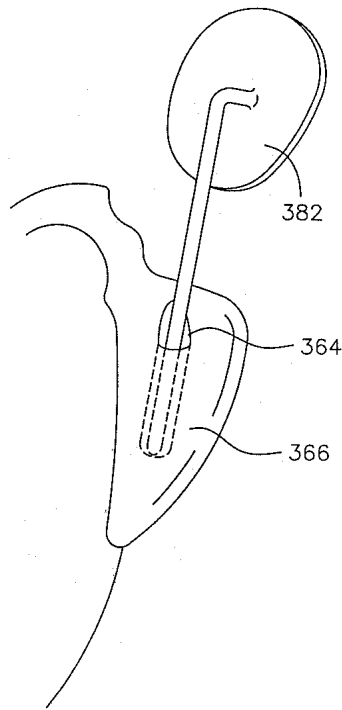


30

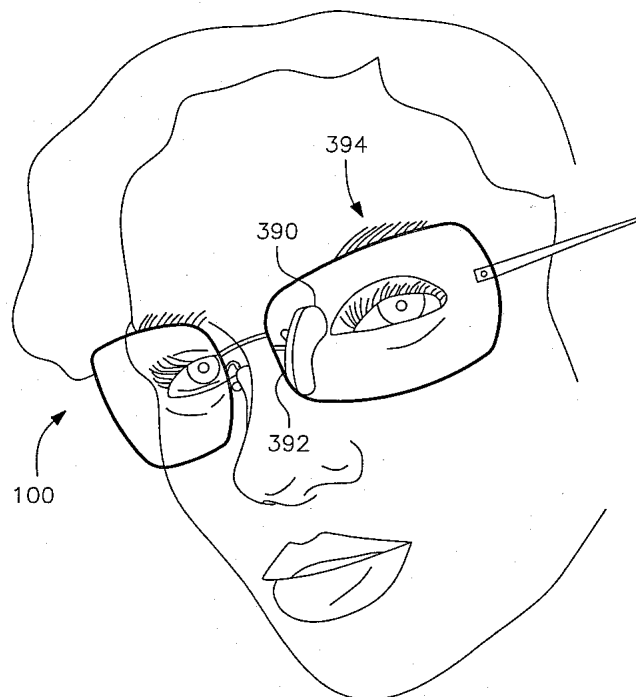




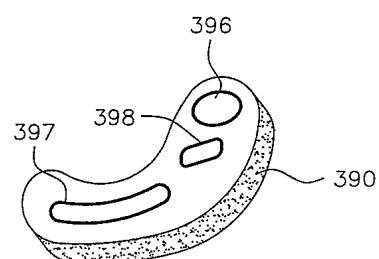
31d

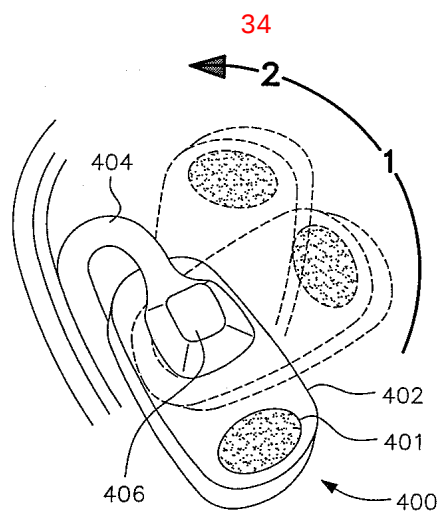
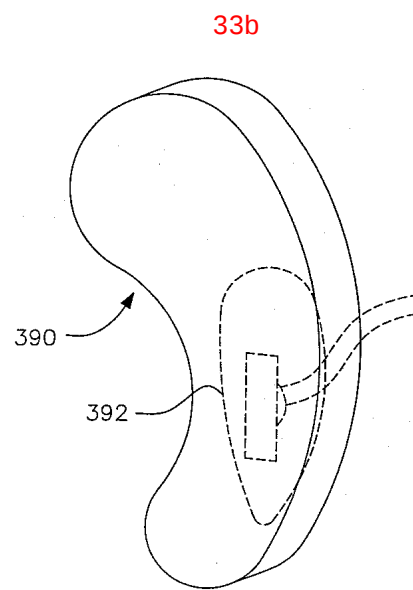
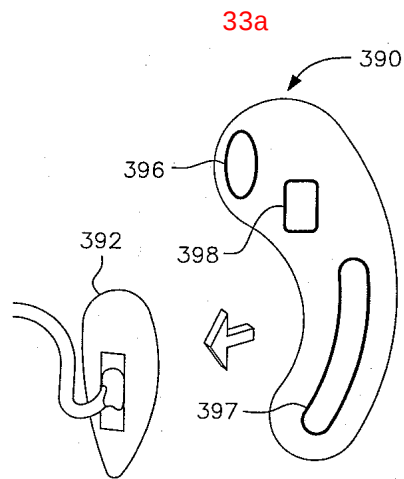


32a

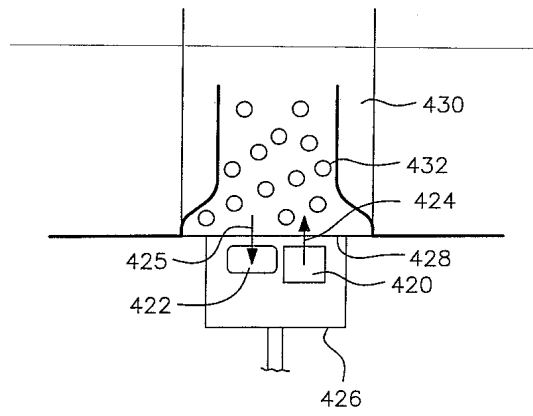


32b

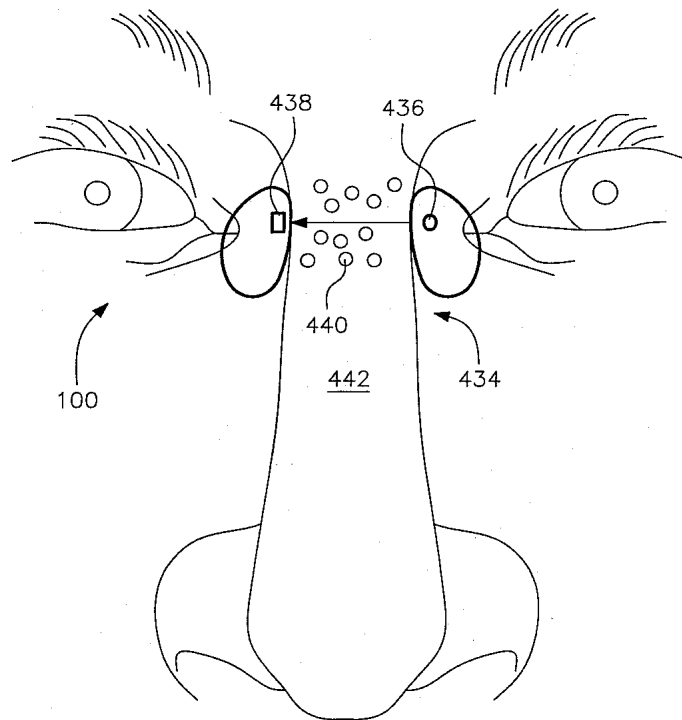




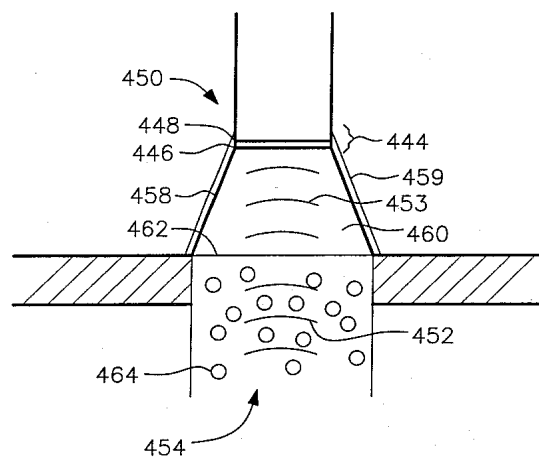
35

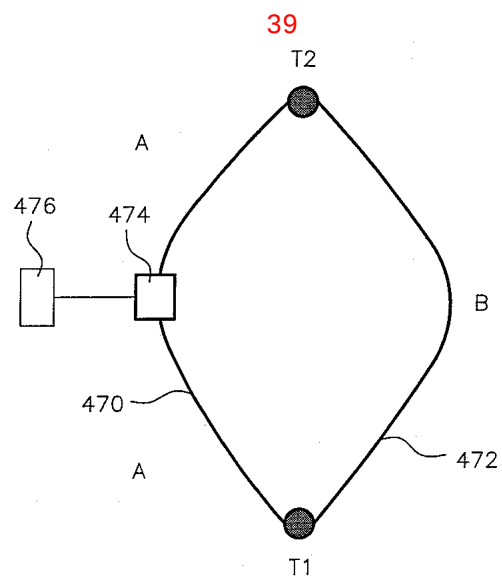
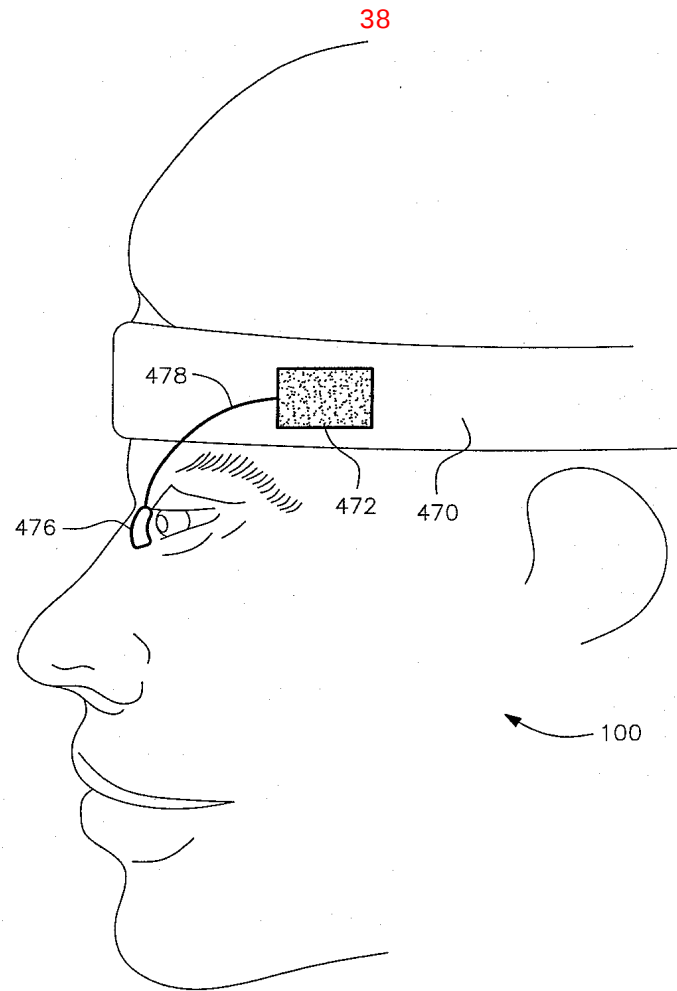


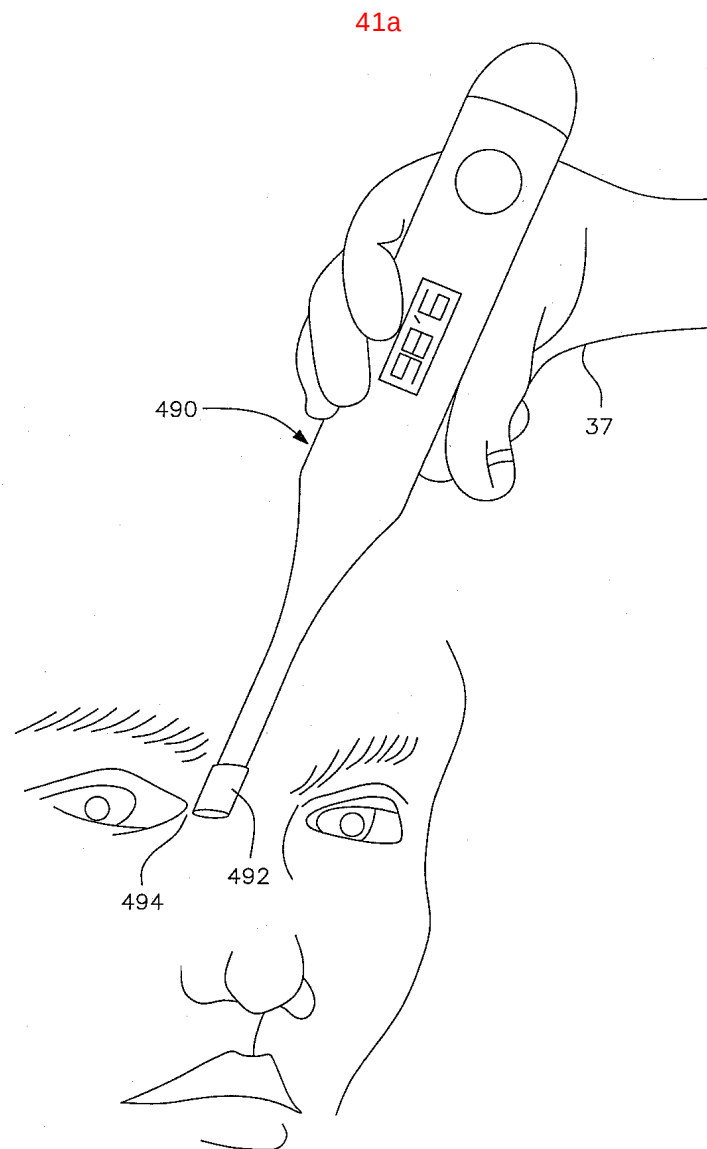
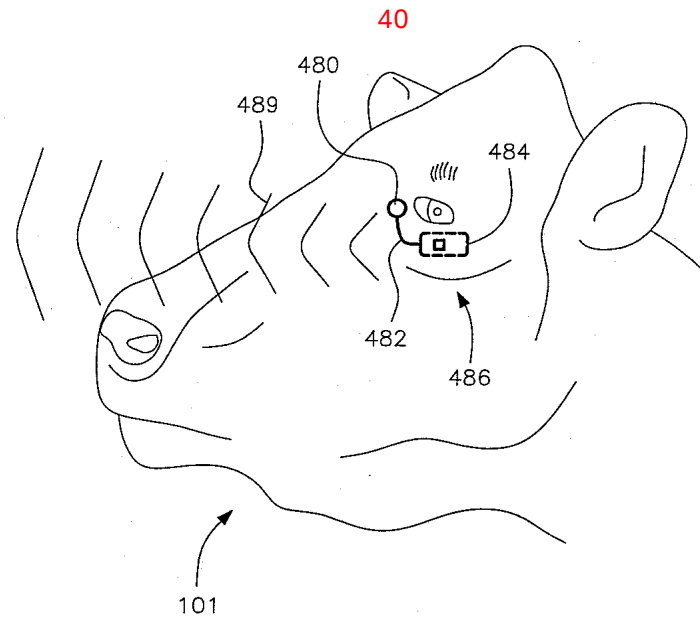
36



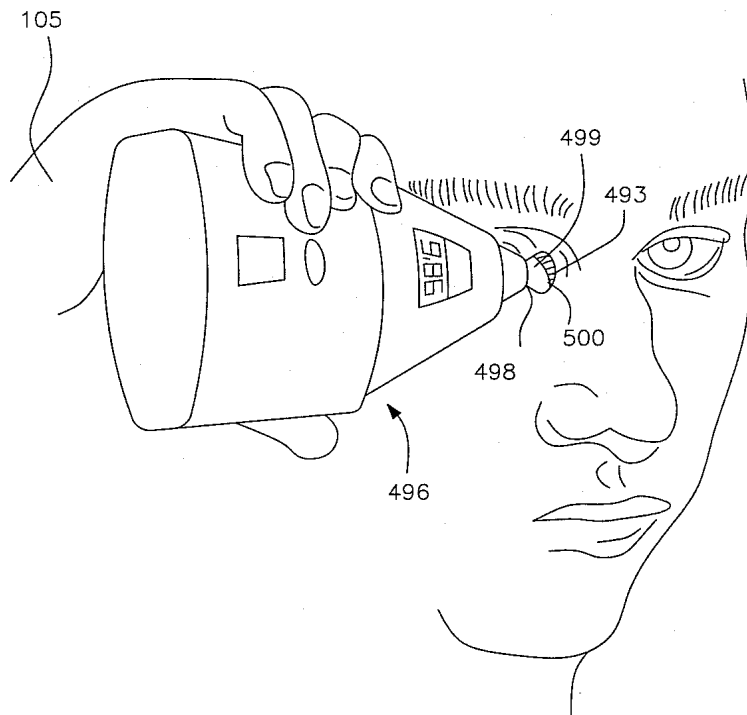
37







41b



专利名称(译)	用于测量生物参数的装置和方法		
公开(公告)号	KR1020050006180A	公开(公告)日	2005-01-15
申请号	KR1020047017008	申请日	2003-04-22
[标]申请(专利权)人(译)	马尔西奥·马克·阿布雷乌 孩子的哭了马克·马丁的虔诚.		
申请(专利权)人(译)	孩子的哭，不要哭，马克，虔诚地，马丁		
当前申请(专利权)人(译)	孩子的哭，不要哭，马克，虔诚地，马丁		
[标]发明人	ABREU MARCIO MARC		
发明人	ABREU, MARCIO, MARC		
IPC分类号	A61B5/04 A61B5/00 G01K13/00 A61B5/0205		
CPC分类号	A61B5/0205 G01K13/002 A61B5/6814 A61B5/412 G02C11/10 A61B5/01 A61B5/6821 A61B5/015 A61B5/0008 A61B5/0017 A61B5/0026 A61B5/0042 A61B5/0059 A61B5/02055 A61B5/0476 A61B5/0537 A61B5/14517 A61B5/14551 A61B5/14553 A61B5/1486 A61B5/4064 A61B5/6803 A61B5/72 A61B5/7271 A61B5/742 A61B5/746 A61B2560/0214 G08B5/36		
优先权	60/374133 2002-04-22 US		
外部链接	Espacenet		

摘要(译)

本发明提供了一种支撑结构，用于将传感器放置在生理隧道中以测量身体的物理，化学和生物参数并根据参数的测量值实现动作。支撑结构包括传感器，该传感器使用特殊形状装配到支撑结构中，用于身体的生理上持续的，无阻碍的数据采集。信号通过无线传输发送到远程站，例如电磁波，无线电波，红外线，声音，或通过语音或视频传输的本地传输。物理和化学参数包括脑功能，代谢功能，流体动力学功能，水合状态和血液成分水平。支撑结构包括贴片，夹子，眼镜，头戴式齿轮等，其包括设置在隧道末端的无源或有源传感器，并且传感系统位于生理隧道中并接近。 13

