

(19)  
(12)

(KR)  
(A)

(51) 。 Int. Cl.<sup>7</sup>  
A61L 9/20  
B01D 46/10

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(43)

10-2005-0008724  
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(86)

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2004 11 19  
2004 11 19  
PCT/US2003/015695  
2003 05 16

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(87)

WO 2004/011041  
2004 02 05

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60/382,126  
10/434,041

2002 05 20  
2003 05 08

(US)  
(US)

(71)

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, 14221, ,

312

(72)

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, 14221, ,

312

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, 14219, ,

4099

, , ,  
, 33040, ,

1604

,  
14226, ,

100

(74)

:

(54)

('UV')

UV

V-

가

(irritants)

(UV')

(radiation)

(HEPA')

(irradiation)

가

2250 - 3020 Angstrom

UVGI 가

Pick ('Pick')

5,330,722 UV 가 UV

UV UV Pick UV UV UV

5,766,455 , Berman 가 가

(isolation room) , 가 가 가

tionary filter) 가 , (path) (air inlet), (air outlet), 가 . (sta  
(upstream side) , 가 가 (downstream side)  
, 1 ('UV') (illumination)  
, 2 UV , UV  
, UV  
, UV  
, UV  
(killing zone) , UV  
2 UV 가 . 1  
2 UV  
(air sampling port)  
(communication) ,  
(prefilter) , 가  
, 1 가  
(reflector) UV 1 2 UV ,  
UV V- 1 2 UV UV ,  
, UV V-  
, 가 가  
가 , 가  
(path) , (inlet), (outlet), 가  
, 가 (wall) , 가 가 (facing)  
, 가  
가  
(down  
stream facing open chamber) 2 , 가 2 ,  
(downstream facing chamb  
er) , 2  
- 2 가 V

가

가

가 (path)

가

가 (pat

h) 가 (communication) 가

가

가

(barrier) (space) (isolation device)가 (air conduct unit)

(recycling vent) (communication) 가

가 (baffle)

(bed) 가

(wheelchair)

(romm) 가

가

(negative)

가

가

가

1 .

2 1 .

3 1 .

4 1 , .

5 4 .

6 4 .

7 1 .

8 가 (HEGA) 1 .

9 1 .

10 (duct) 1 .

11 (positive) 가 1 .

12 (negative) 가 1 .

13 .

14a 14b 1 .

15 가 .

16 15 가 .

17 13-13 15 가 .

18 가 .

19 .

1 (12) (10) (10) 2 1  
 (24), (10) (26) (14) (14) (16), (18), 2 (20, 22),  
 (14) , (30) (24) (air inlet)(28) (air outlet)(30)  
 / (28) (30) (30) (26) (28) (28)  
 (28), (30), (14) (air path)(A) (14) (14)  
 (14) 가 (72) (14)  
 (28) , (32) (A) (14) (32) ,  
 (32) (32) (fan) , (32)  
 (32) (fastener) (14)

(32) (34), (32) 3

(32) (14) (30) (A)

(12) (A) (14) (28)

(30) (12) (12) (upstream) (downstream) (24) (12)

(12) ( ) 가 (32)

(14) (12)가 (14)

(12) (12) (38)

(12) ('UV') (50) (14)( (14) ) UV

(50) (A) (12) (12a) (illuminatin

g) (14)( (14) ) (12) (12b) (54)

(12b) (12)

(56a) UV (50a) (12) (12a)

UV (54) UV , UV (12) (12b) (56b)

(56a, 56b) UV (50, 54)

(50, 54) (ultraviolet germicidal irradiation)('UVGI')(52)

(12a, 12b) UVGI / 2250 3020 Angstrom

(56) (12) (UVGI)(52) (12) UVGI

ptoelectronics UV PerkinElmer Model GX018T5VH/ULTRA - V USA, MA, Salem Perkin Elmer O

/ (56) (10) (50, 54)

(12) 0.3 (micron)

90% (12) 0.3 99.7% , 1000 CFM(cubic feet

per minute : ( ) (cubic meters per minute) 28.32 ) ,

('HEPA') 가 (12) 0,1 99.99% , 600 2400 CFM(

)가 16.99 67.96 ) , ('UV') (12) (12)

(fiberglass mesh) , UV (12) UV

(transmission)가 (irradiating)

(12) (mesh) (12)

(12)

4 (12) , 12

가 (12c) V - (V-bank filter) (12)

2 (36) (mesh)

(36) (41) UV 가 (41) (48) (

12) (44) 가 (12) (46) 가 (12c)

(upstream facing open faced chamber)(12d)

(downstream facing open faced chamber)(12e) (36) (12c)

(12d, 12c)

(12d, 12c) V - V -

30 (arc) V - (D) 11 3 / 8 (0.

23 ) (12) , UV

가

V- , NJ, Riverdale Camfil Farr, inc. 가 Camfil Farr Filter 2000 (TM)  
 r 2000 (TM) Camfil Farr Filter 2000 (TM)  
 , Camfil Farr, inc. (micro-glass fiber)

가 700 CFM( 19.82 ) (10) Camfil Farr Filter 2000  
 (TM) Model No.FA 1565-01-01 , IEST Recommended Practice 가 , 0.3  
 99.9% (rated check airflow)가 900 CFM( 25.48 )  
 1.0 w.g (media area) 174 (16.16 )  
 24 x 24 x 11.50 ( x x )( , 0.61 x 0.61 x 0.29 )

Camfil Farr Filter 2000 (TM) Model No.FA 1560-01-01 가 2000 CFM( 56.6  
 3 ) (10) 가 2400 CFM( 67.96  
 ) 900 CFM( 25.48 )  
 Camfil Farr Filter 2000 (TM) Model No.FA 1565-01-01 431 (40.  
 04 )

0.3 99.999% 0.1 99.99% ULPA Camfil Farr  
 Filter 2000 (TM) Model Nos.FA 1565-02-01 FA 1560-01-01 가  
 FA 1565-01-01 FA 1  
 565-02-01 가 693 CFM( 19.62 ) , 가 700 CFM( F  
 19.82 ) (10) FA 1560-01-01  
 A 1565-02-01 가 1848 CFM( 52.33 ) 가 2000 CFM(  
 56.63 ) (10)

V- NY. Grand Island Total Filtration Solution Inc. 가 F  
 landers Model SF2K-5-G2-CG 가

(12) UV (50) (12) UV (54) 3  
 , UV (50, 54) (12) (12a) (12b) (mesh surfa  
 ce) (illuminating) UV (50, 54) V-  
 (12) 가 (12c) (12d) (12e)  
 가 (56a, 56b) (12d, 12e) UV (50, 5  
 4)

UV (50) (48) (12) (58)  
 zone) , 가 (12) 가 (12) (killing  
 (odorant) (54) UV U  
 SA. 01970 MA, Salem Perkin Elmer Optoelectronics PerkinElmer Model GX018T5L/ULTRA-V

UV (50) (corona wires)  
 가 가 (59) (12) (12)  
 (36) (10) (14) (12) 5  
 (59)가 , 6

(12) UV (50, 54) (50 /  
 59) (50, 54) UV (50)  
 UV

254 ('nm') UV (characteristic logarit  
 hmic decay equation)

$$\ln[S(t)] = -K_{UV} I_{UV} t$$

,

$$K_{UV} = \quad (\text{cm}^2 / \text{microW} \cdot \text{s})$$

$$I_{UV} = \text{UV} \quad (\text{microW}/\text{cm}^2)$$

$$t = \quad (\text{sec})$$

(k)

1

			(microW/cm <sup>2</sup> )	(sec)
		99%	25	0.02
A		99%	25	0.02
		99%	25	0.08
		99%	25	1.5
		99%	25	1.9
		99%	25	3.6

(characteristic logarithmic decay equation)

$$\ln[S(t)] = -K_{O3} I_{O3} t$$

,

$$K_{O3} = \quad (\text{l}/\text{mg} \cdot \text{s})$$

$$I_{O3} = \quad (\text{mg}/\text{l})$$

$$t = \quad (\text{sec})$$

(k)

2

			(mg/l)	(sec)
		99.99%	0.3-0.4	180-240
29		99.99%	1	60
sp		99%	0.2	30
sp		99%	0.2	30



(54) , (12) 가 (54) (18) .

(32) (12) (12) CFM (turn over rate) 16.99-67.96 ) .

600 2000 CFM( (50, 59) UV (55) , 255

(12) UV (54) 'C' (12) , 255

.3 (nanometer)가 OSHA가 (0.1 ppm ) (30)

, (room) (50) / (A) 가

(59)가 (10) UV (54) UV (54) , UV (54) (radiation) ,

(on) UV (54) UV (54) (50)

, (57) (14) (28) (10) .

(57) 7 (54) (10) OSHA가 0.1 ppm , 0.005 ppm

(57) (shut off) 가 , (57) (54 / 59)

(on) (57) 가 OS-1X Low Concentration Ozone Swi

California, Auburne tch가 Aplied Ozone Systems

(55) 3 7 (50 / 59)가 .

(55) 3 (10) (61) 7 (1

0) UV (50, 54) (34, 63, 64, 65) (32), (10) (59), 7

(66)가 (67) (10) (34, 63, 64, 65) (66)

(66)가 (61) (10) (61)

UV (50) UV (54) (61)

7 (66) UV (50), UV (54), (55) / (57) (59), (32),

( ( ) (73a, 73b, 73c, 73d, 73e) .

(10) (66) (69a) (10) (69b)

(69b) 가 (66) 가 가

('rf') (69c) 가 (70)가 (10) 가

가 (safe room) (10) 가

가 (10)

(10) (32) (50)  
 / 59) 가 (10) (flooding) , (50)  
 (A) (32), (50 / 59), UV (54)( UV (54) 가 (64a) )  
 (32) (off) , UV (54) (off) (50 / 59) (on) ,  
 (64a)  
 (10) UV (50) (14) (60) (12))  
 (60) 가 UV (50) (framing) (42)  
 UV (50) (60) 1  
 가 , 가 NJ, Liberty Corner Fedders Corporation  
 가 (well defined) 3 (ze  
 olite) 가 (cavity)  
 가 , BioSponge, PurePleat 40, MicroSponge  
 Air Filter(TM), 가 Flanders Precisionair, ST.Petersburg,  
 Florida www.dustless.com (60) 24 x 12 x2 (  
 x x )( 0.61 x 0.30 x0.05 )  
 , High Efficiency Gas Absorber('HEGA') (71) 8  
 (10) 가 HEGA (71) , (NBC)  
 가 (scavenger) 가 HEGA (71) (71a)  
 (71b) (71b) (28) (10)  
 가 (duct adapter)(68) 가 (32) HEGA (71)  
 (71b) , HEGA (71) , HEGA (71) (71a)  
 (10) (28) , (71c)가 (10)  
 (68) HEGA (71) 2 (71b) . HEGA 가  
 (86) 가 , HEGA (71) (10) 가 ,  
 (30) , (10) 가  
 가 HEGA Texas, Houston Riley Equipment Co. 가 AZM/TEDA  
 for Warfare/Nuclear Carbon RS 12가 . AZM/TEDA 가  
 - (activated tetra-charcoal) , Riley Equipment Co.  
 (72) 1 2 (10) (14)  
 , 가 9 (14)  
 (72) (open end) (72) (80)가 9 ,  
 (74) 가 (72) (72) (80)  
 (72) (adapter)(85) , (74) (78)  
 (80) , (72) 가 (72) (80)  
 , (72) (spaning) (10)

가 (32) 가 (83) (10) (84) (10) , (78)

(80) (10)

, (32) (12) (12) (12)

. (12) (12) (72) (12)

30) (14) (32) (12) (12)

(72) .

(78) 가 (72) (colorimetric) Sorbant

adapter)(84) 가 .

air sampling tube (flushing) .

(80) (rotameter)가 (80) 가

가 .

(80)

가 , (sampler) , Occupational Safety and Health Administration(OSHA : ), Environmental Protection Agency(EPA : ), National Institute for Occupational Safety and Health( NIOSH : ) 가

.

(10) , (10) , 가

. , (72) ,

가 , ,

er of time), ' (air changes)' 가 (10) 가 (numb

가 2 4 가 , , 4 8 8

12 , 2 (agent) 8

(10) 10 (duct) ,

. (88, 90) (68, 86) (10) 968, 86)

(68, 86) (10)

(88) (10) (88, 90) 가 (10)

(90) (10)

가

가 11 가 (102) (102)

(10) 가 . (102)

(102) . , (102)

12, 13 . 12 , (negative) (10) (104) (104) (104) (10)

13 (107) (107a), (107b), (107c), (105) (107e) (107d) (113) (107) (105) (12) (109) 가 (111) (tamper proof screw) 3/16 (4.76 ) (105) 가 (prison ducting system) (107e) (107) (57)가 (105) 가 (107) 가 (107)

(10) 14a 14b (28) , (10) (24) 2 (98) 1 (92, 94) (96) . 1 (100) 1 (24) (96) 2 (92, 94) 2 (98) (C) , (111) (10) (24) (92, 94) (spill) (92, 94) (10) (34) (10) (dissipation)

(10) 15 19 6,162,118 ( , 118 ) 15 19 가

가 (108) (negative) (106) (106) (108) 가 , 가 가 가

(46) (12) UV(52) (44) (12) (germicidal killing zone) '118' 가 (112) (108) (recycling vent)(110) 50% 75% 가 (108) (112) 가 가 가 (12) (110) , 가 (non)

(106) (114) (114) (118), (120), 2 (122, 124), (126) 1 (116) 1 (116) (126)

(skid bar) (130) (128) .

1 (116) (118) (132) .  
 (132) 2 (134), 2 (136), 2 (138, 140), (142), (144)  
 . (132) (146) 1 (116) (148) ,  
 (146) (132) 1 (116) (114)  
 (148) 1 (116) ,  
 (146) 가 . ,  
 (132) 1 (116) (118)  
 . (150) , (146) (152)  
 (108)

(150) (116) (122, 124) .  
 (132) 2 (138, 140) (142) 가  
 (150) ,  
 (152) (150) (1  
 51) (150)가 , 1 (1  
 16) (152), 1 (116)  
 ) , (152)  
 가 , 가  
 , 가

(173) (108)  
 (154, 156) (132)  
 (154) 15 (156) (156)  
 ) 가 Y X (15) (154, 156) (156)  
 1 (15) (108)  
 (116) (118), (132) 2 (134) 2 (154, 156)  
 . (154, 156) 가  
 (154) 가  
 (154)

(32) 1 (116) (146)  
 (148) (12) (146)  
 (146) (148) (12)  
 , 3 V- , UV (50, 54)가  
 (50) 가

(106) UV (50) (114) (60)  
 (60) (146) UV (50)  
 (146) 가  
 가 ULPA .

(32) (112) (148) (148)  
 1 (116) (118) (106)  
 (108) , (108) 1 (116) (118)  
 ) 가 (110) 16 (116) 가 (112)  
 (108) (108) (110)

16 (18) (bed)  
 . 19 , 가 (108)  
 (164) (164) (164)  
 (128) (114) (108)  
 , (164) (128) (118)

) . , , 가 (118) (128)  
 DC ( , 12 ) AC( 117 ,  
 60 ) ,  
 15 19 , (12) (32)가  
 600 CFM( 16.99 )  
 (108) 175 (53.34 )  
 가 (108)

가

가

(57)

1.

(path) (air inlet), (air outlet), 가  
 (housing) ,  
 (downstream side) (upstream side) ,  
 (stationar  
 y filter) ,  
 (illumination) 1 ,

2

2.

1 ,

가

3.

1 ,

1 2

4.

1 ,

2

5.

4 ,

2 2

6. 4 , 2 2

7. 1 , 2 2

8. 1 , 1 (prefilter) , 가

9. 1 ,

10. 1 , (refle

ctor)

11. 10 , 1 , 2 2

12. 1 , V- V- 가 , V- (illuminating) , 1 V- 2

1	13.				
				(communication)	
		(air sampling port)			
1	14.				
				(intake duct adapter)	
1	15.				
				(exhaust duct adapter)	
1	16.				
		가 0.3	(micron)	99.97	
16	17.				
		가 0.1	(micron)	99.99	
1	18.				
1	19.				
1	20.				
2				(radiation)	(emitting)
20	21.				
		2			2
21	22.				



,  
,  
,  
(on) , (off) , 2 UV 2 UV , (off)  
.

23.  
1 ,  
,

24.  
1 ,  
가 .

25.  
,  
,  
가 ,  
가 ,  
가 .

26.  
25 ,  
,  
.

27.  
25 ,  
,  
.

28.  
,  
(inlet), (outlet), 가 ,  
가 , 가 가  
,  
.

29.  
28 ,

가

30.

28 ,

31.

30 ,

32.

28 ,

33.

32 ,

2

2

2

34.

33 ,

2

2

35.

34 ,

가

V-

1

V-

1

1

V-

2

V-

V-

2

2

V-

36.

35 ,

V-

28 37. ,

28 38. ,

28 39. ,

가 0.3 (micron) 99.97

28 40. ,

28 41. ,

28 42. ,

(communication) 가

43.

가

43 44. ,

가

44 45. ,

가

46.

가  
가  
가

46 47.  
가

48 48.  
가  
(communication) 가

48 49.

49 50.

48 51.

51 52.

51 53.

54.  
48

가

55.  
54

가

56.  
48

57.  
56

가

V -

V -

1

V -

V -

EJ

58.

59.  
58

(communication)

60.  
59

61.  
59 ,

62.  
58 ,

63.  
(isolation device) ,

(space) (barrier) ,

(air condu

ct unit) ,

(communication) ,

(recycling vent)

64.  
63 ,

가

65.  
63 ,

(deflecting) (baffle)

66.  
65 ,

50% 75%

67.  
63 ,

가 가 , , 가

2

68.

67 ,

69.

63 ,

가

(bed)

70.

63 ,

가

71.

(isolation wheelchair) ,

가

가

(seat) ,

(recycling vent)

72.

71 ,

가

73.

71 ,

74.

71 ,

50% 75%

75.

71 , , 가 가 , 1 , 2 .

71 76. , .

77. , (romm) , 가 , .

78. , , 가 가 , 가 , 가 , (negative) , (ducting) .

78 79. , , 가 가 , 가 , 가 , .

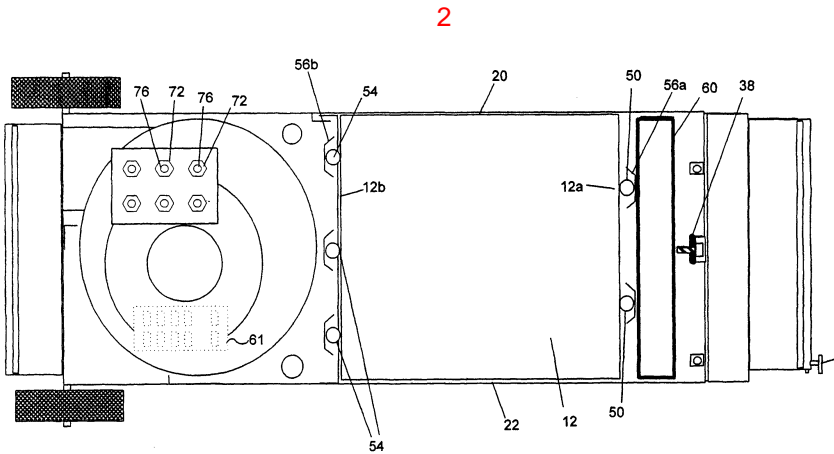
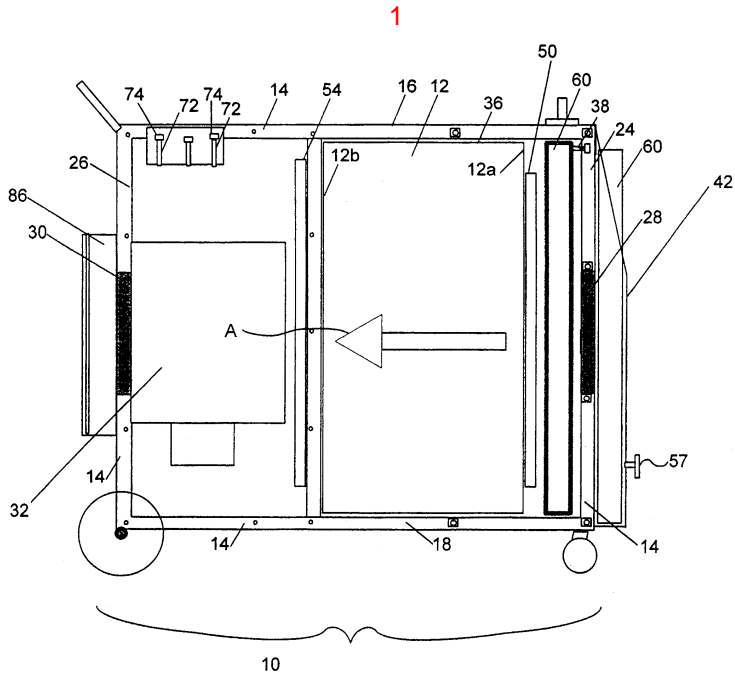
80. , , 가 가 , 가 , 가 , .



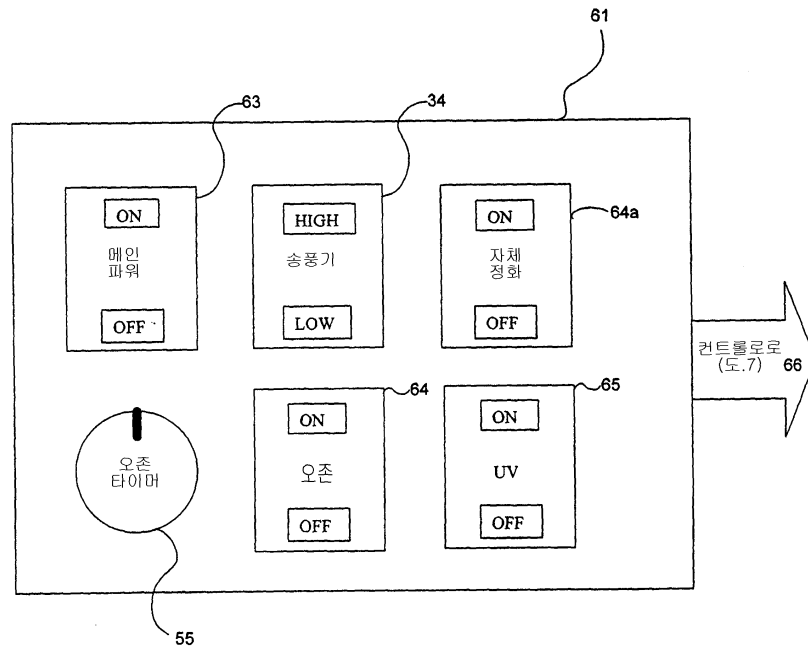
가

(negative)

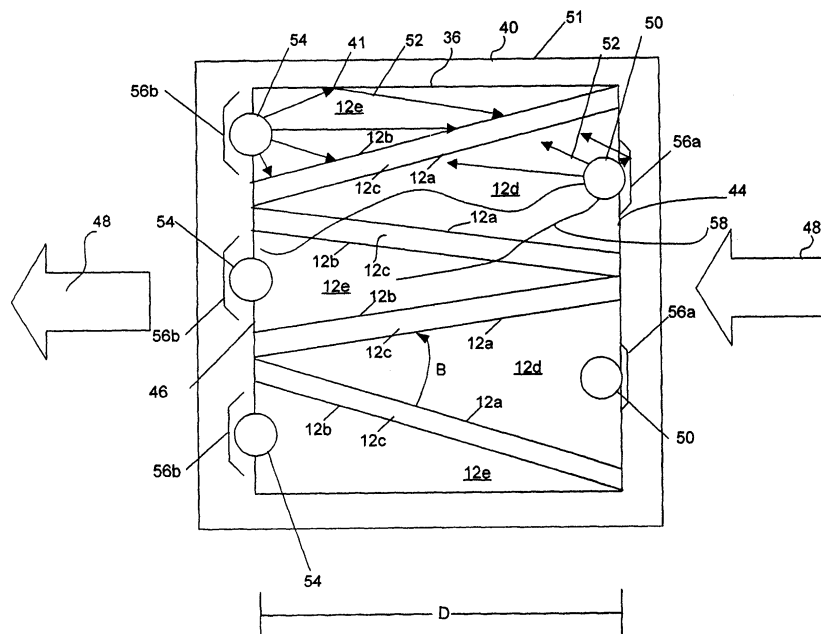
(ducting)

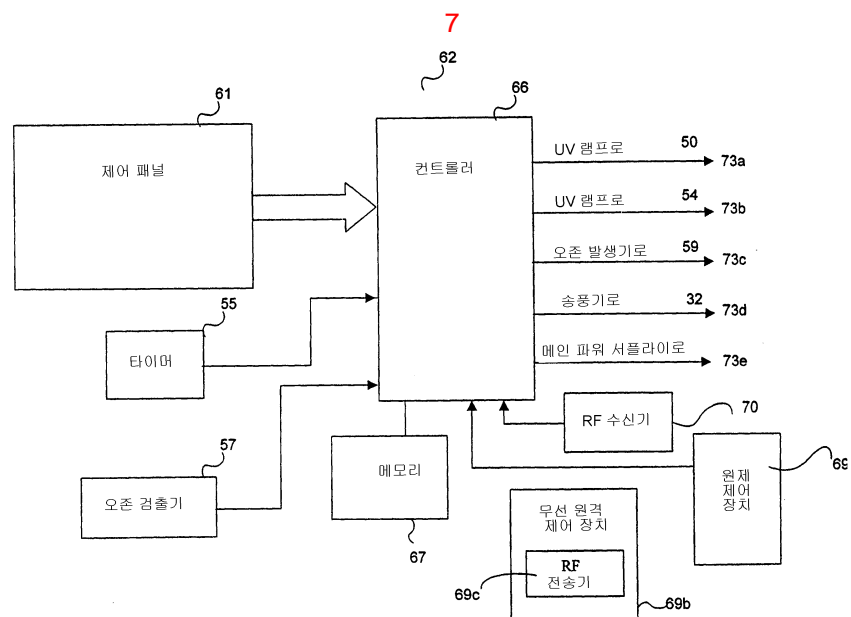
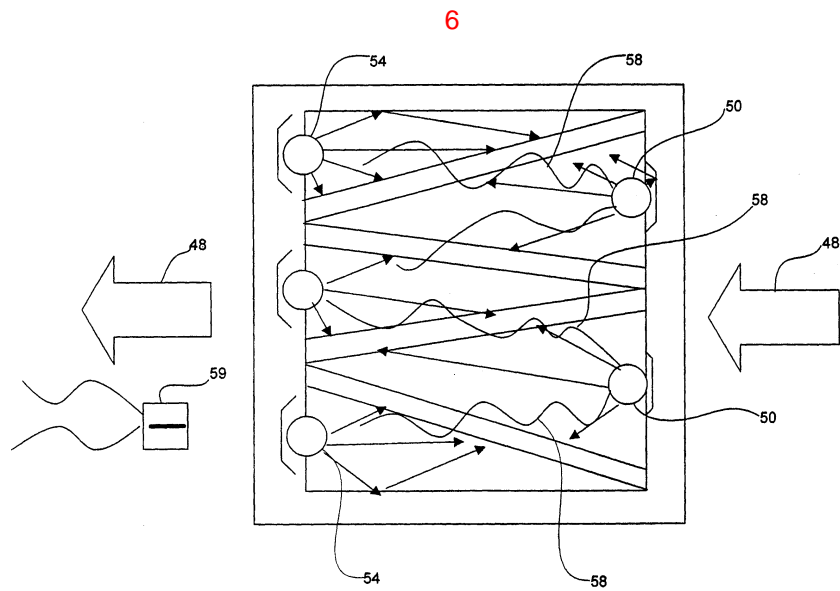
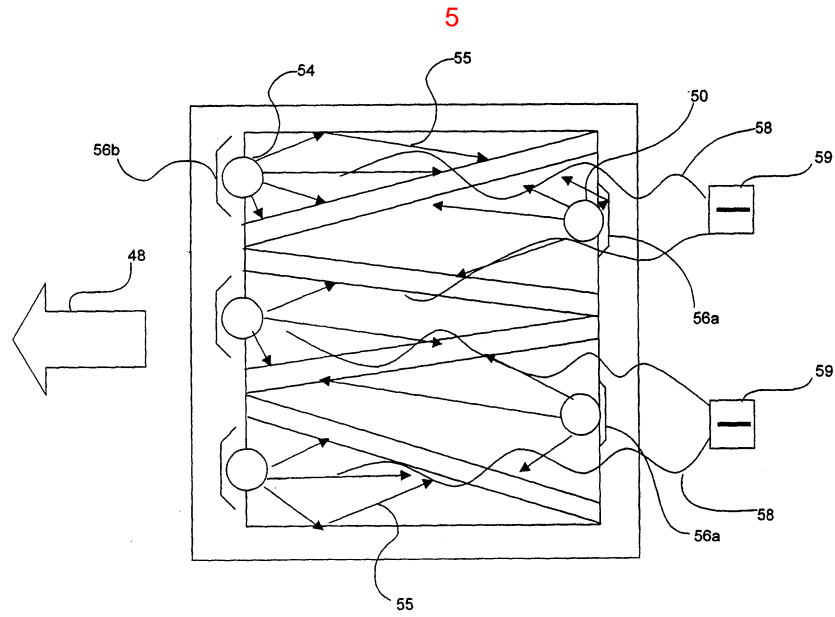


3

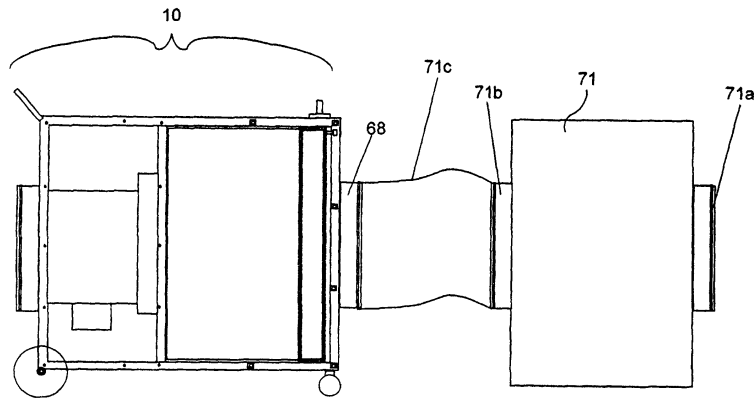


4

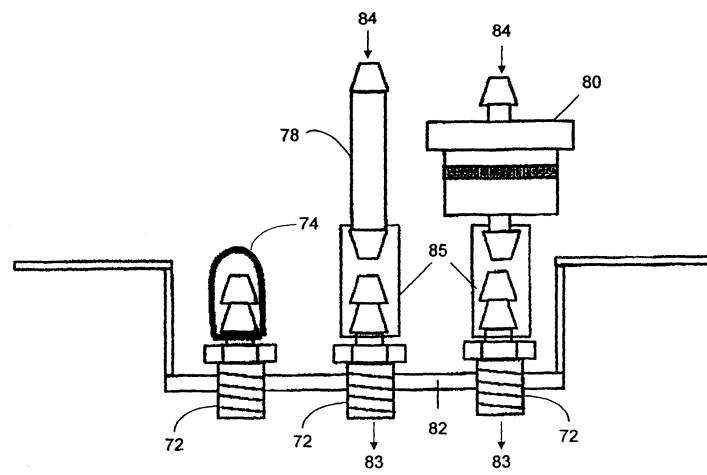




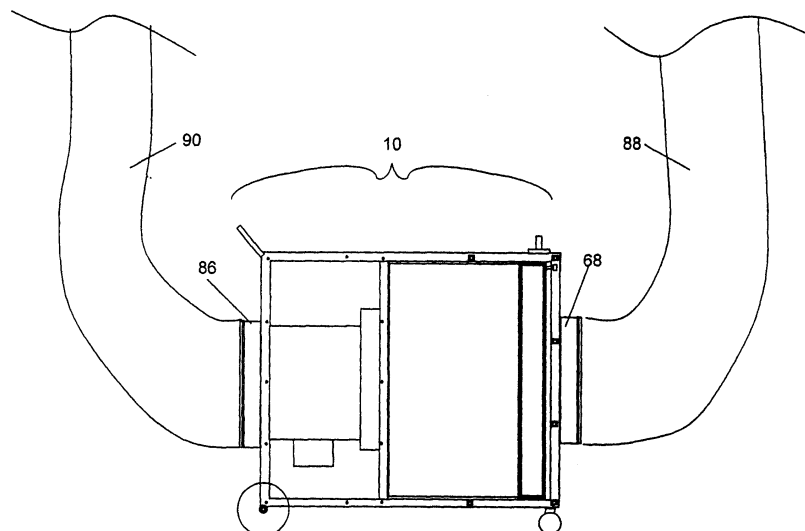
8



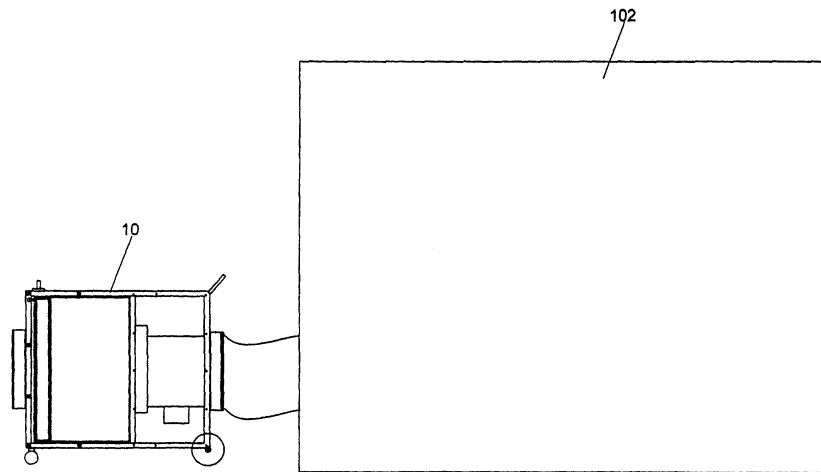
9



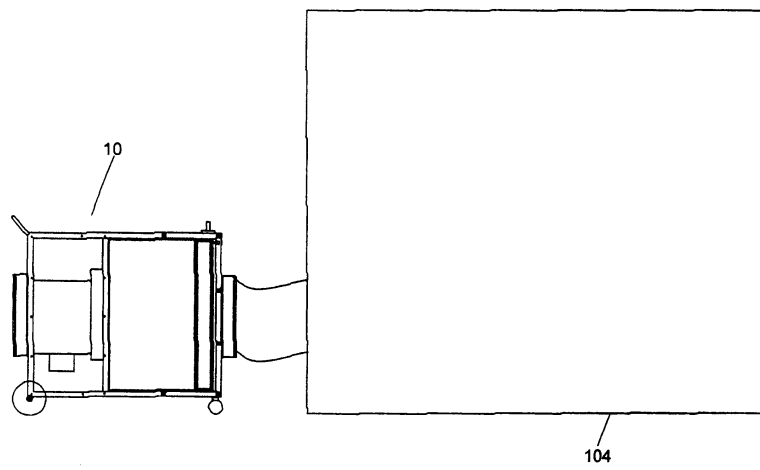
10



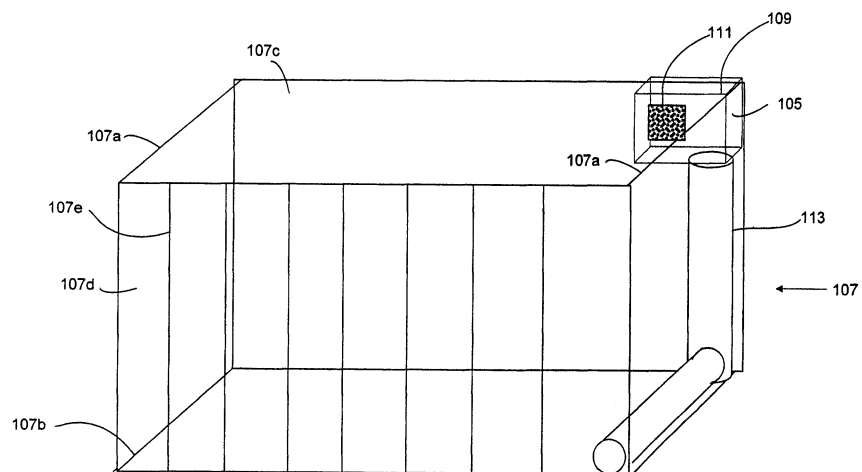
11

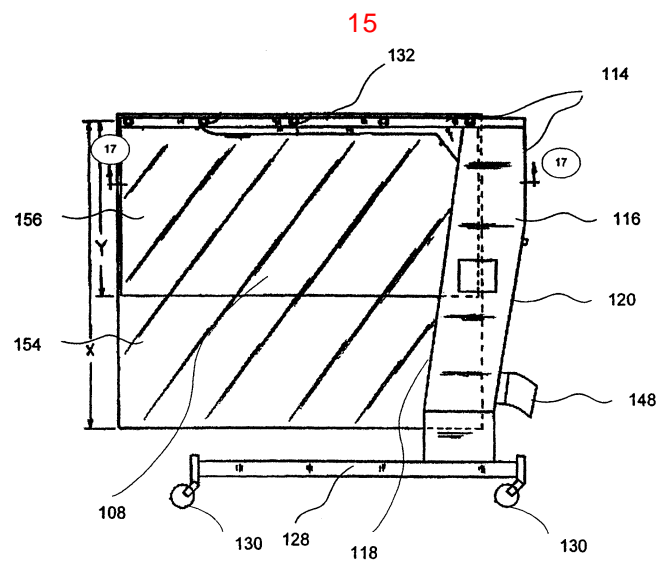
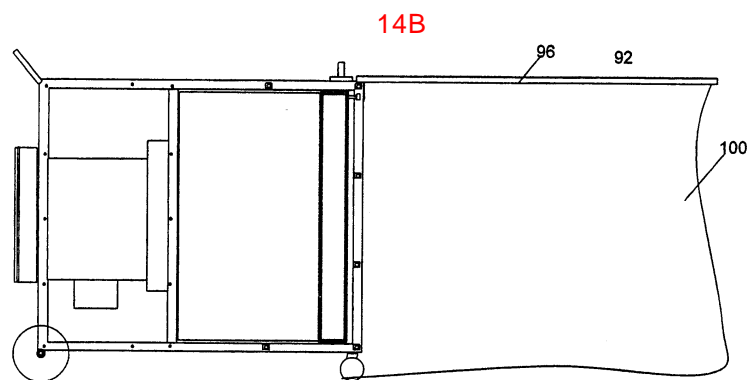
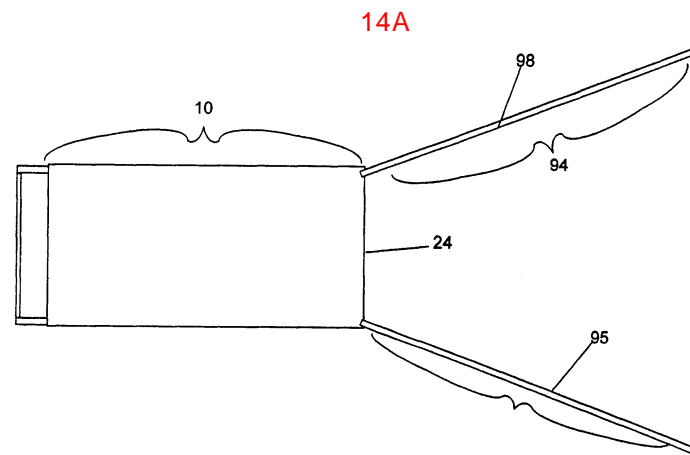


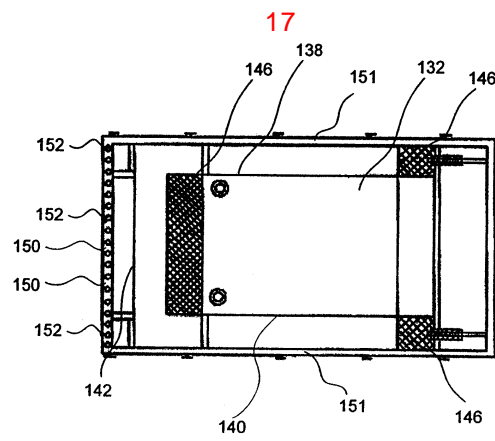
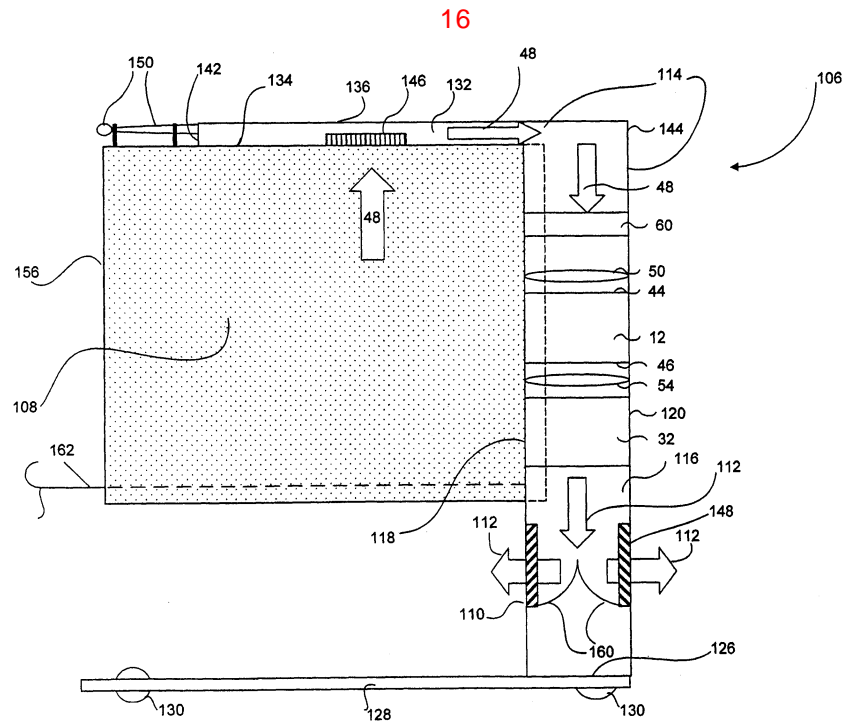
12



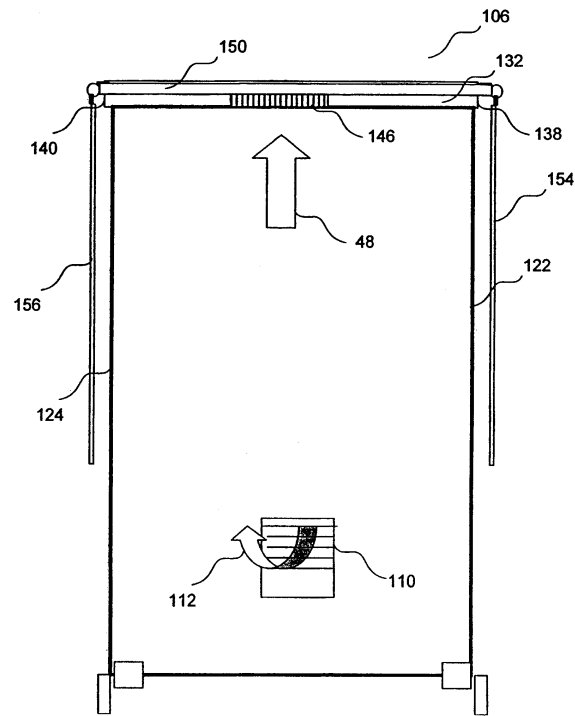
13







18



19

