

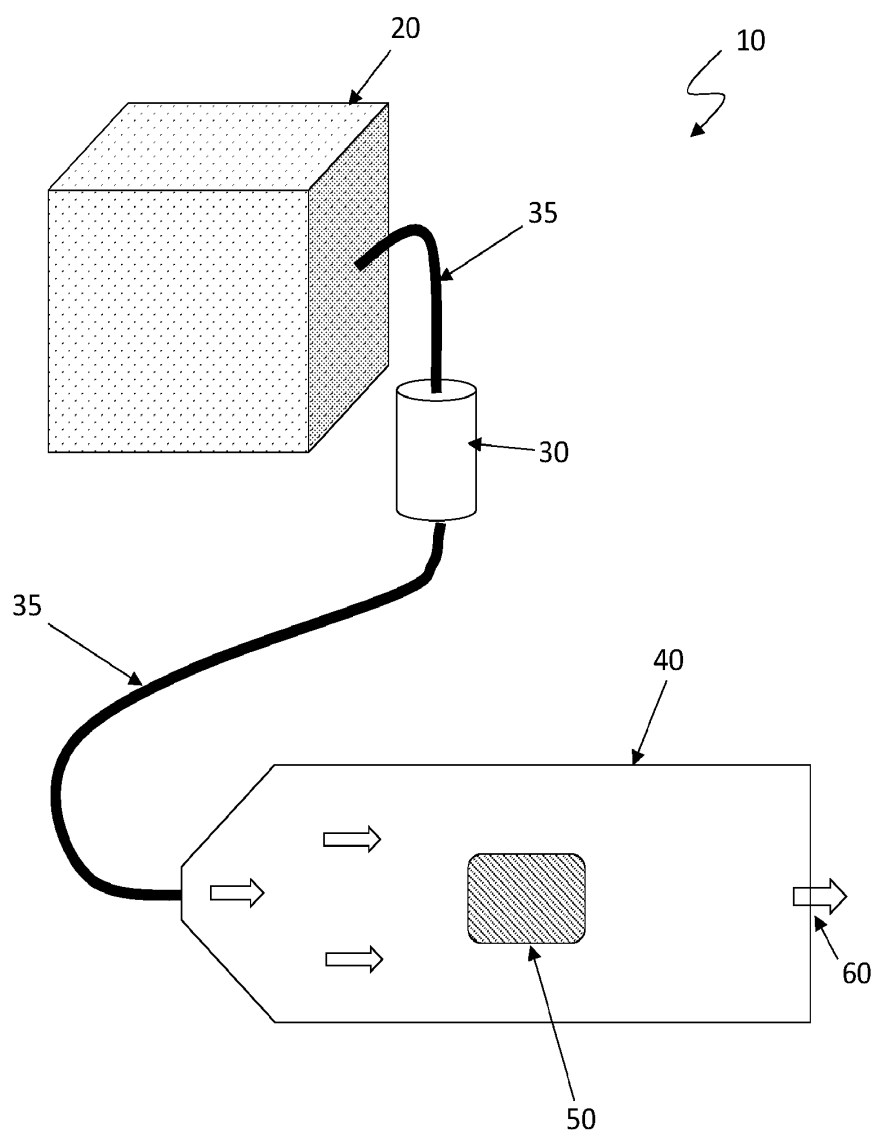


FIGURE 1A

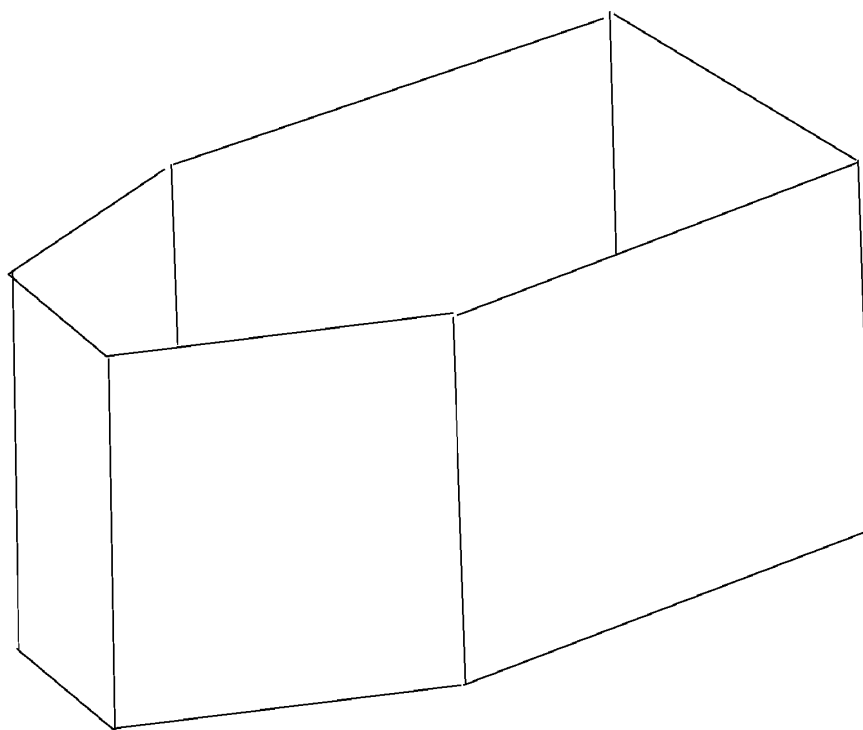


FIGURE 1B

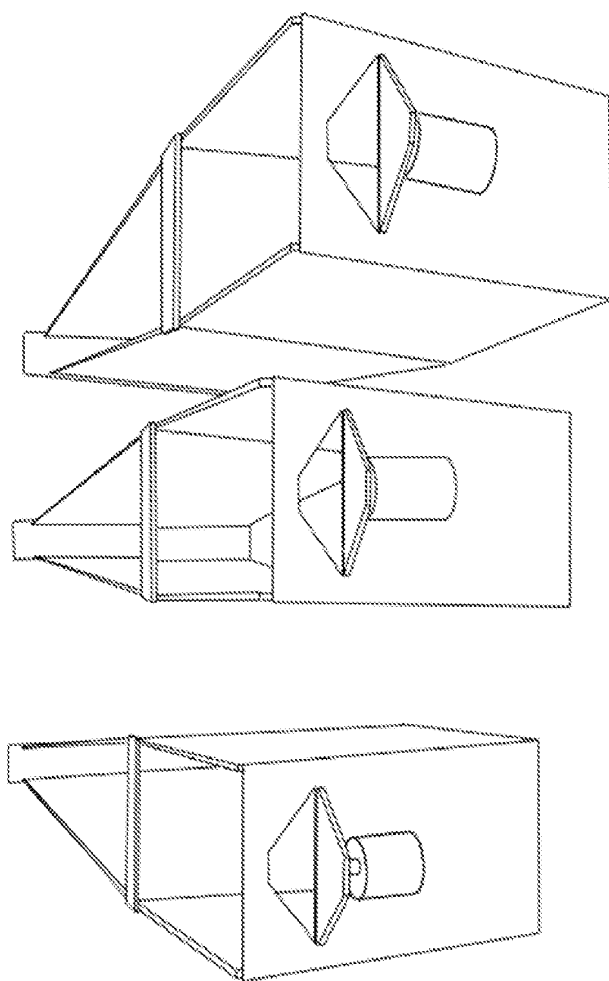


FIGURE 2A

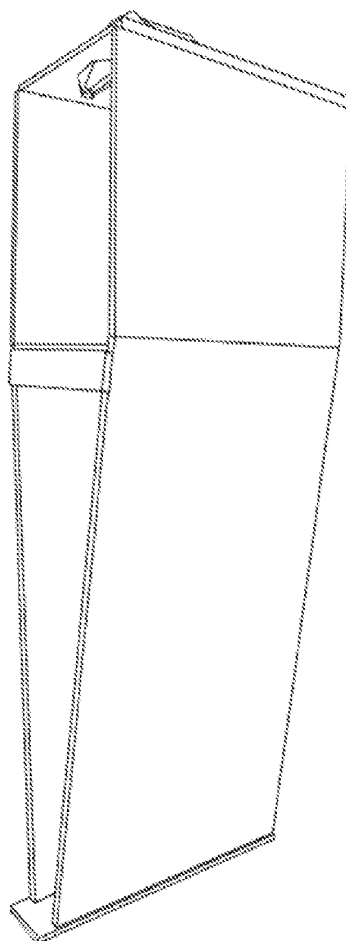


FIGURE 2B

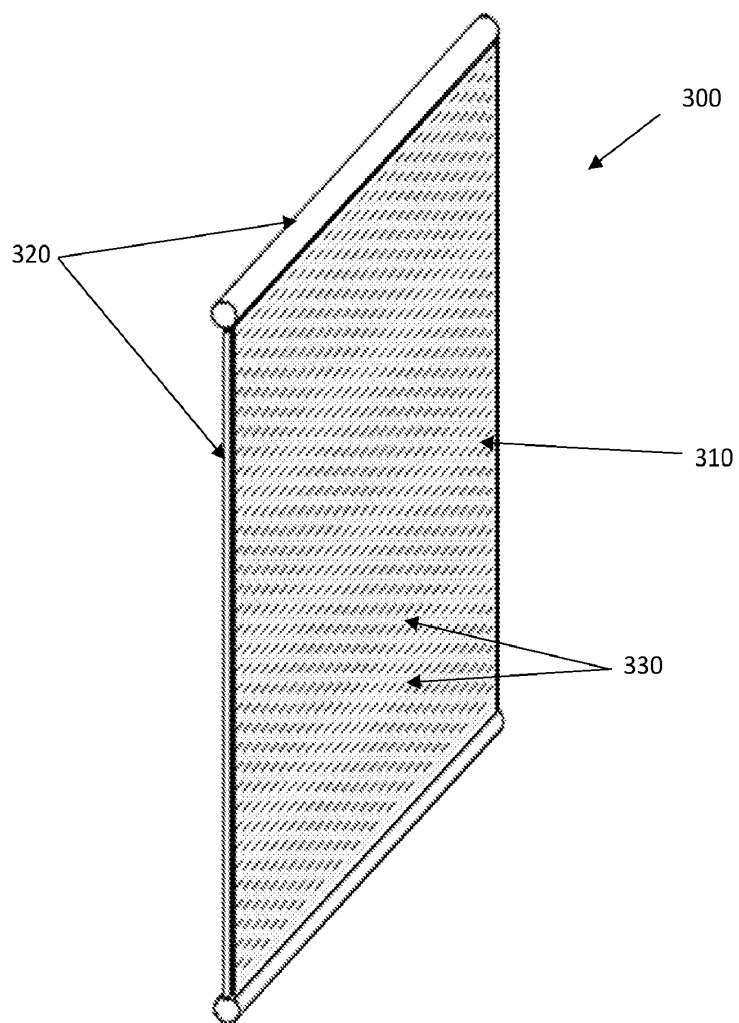


FIGURE 3

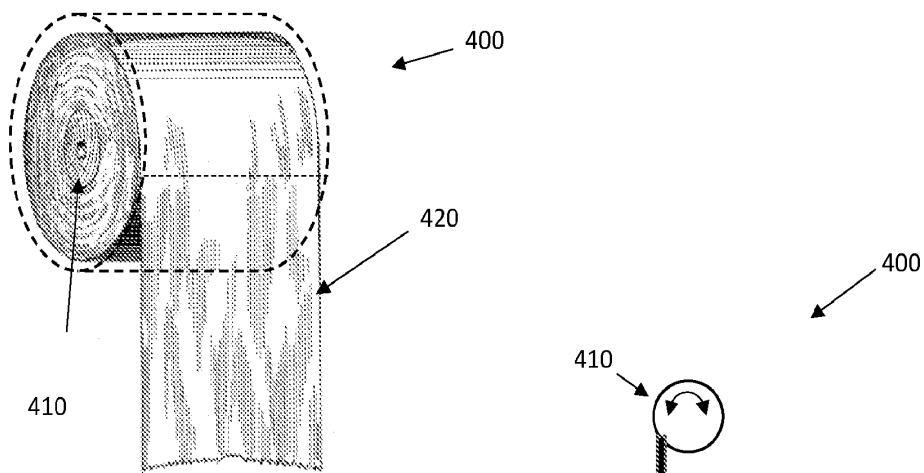


FIGURE 4A

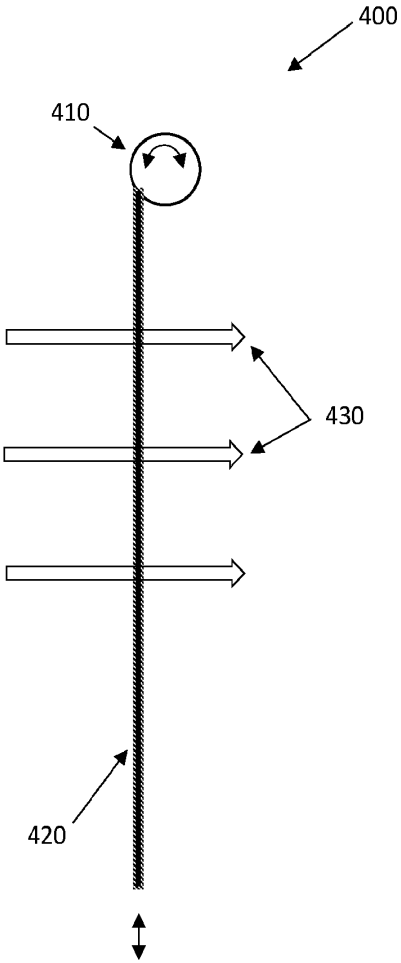


FIGURE 4B

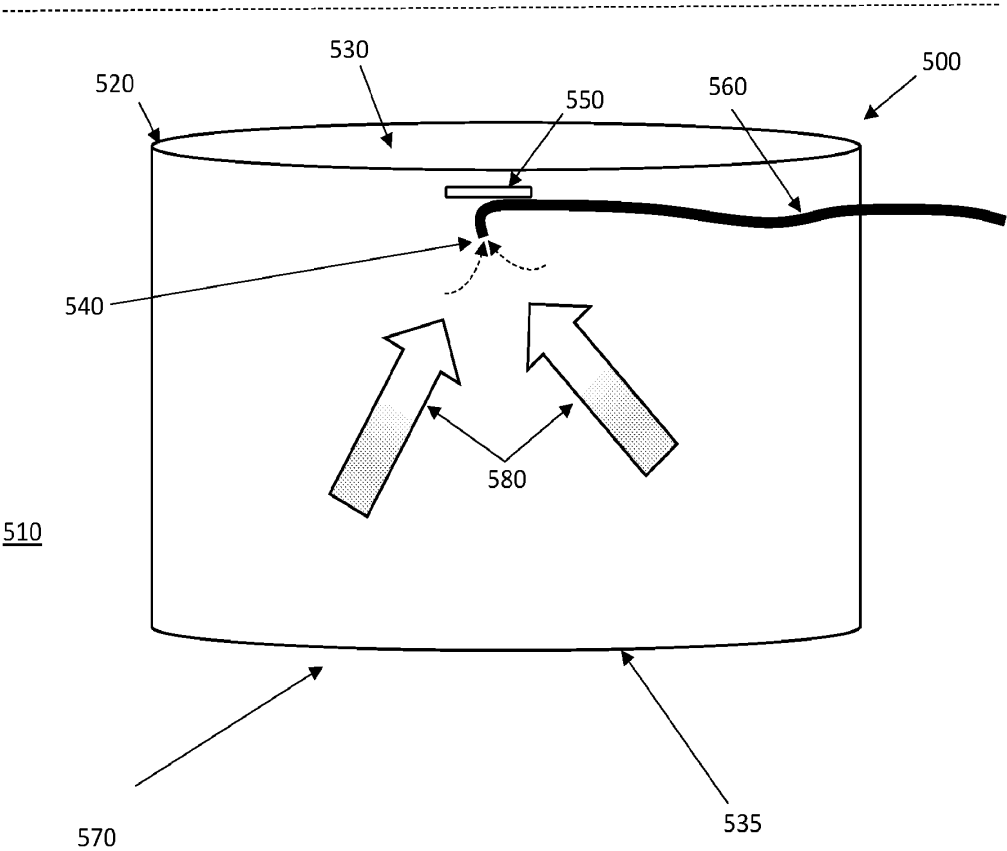


FIGURE 5

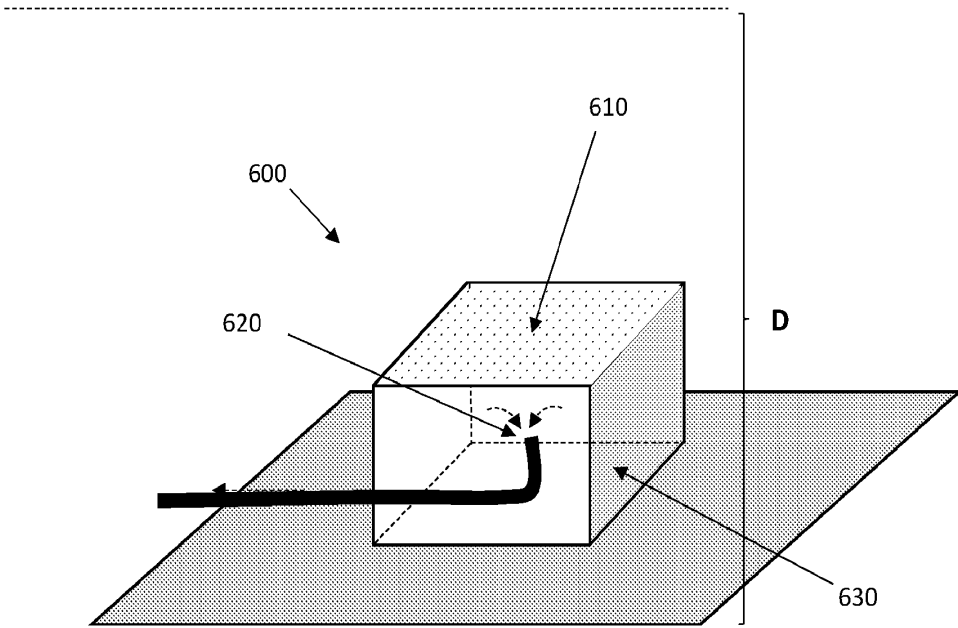


FIGURE 6A

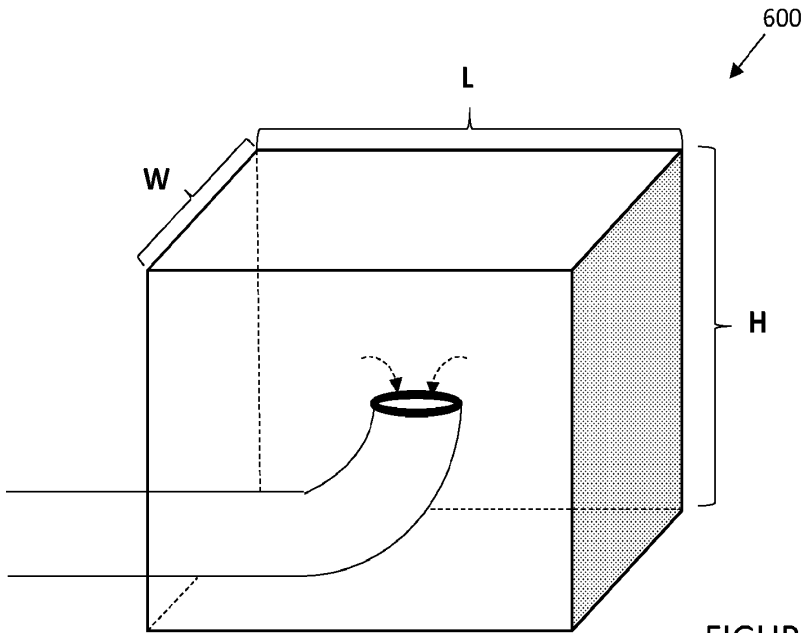


FIGURE 6B

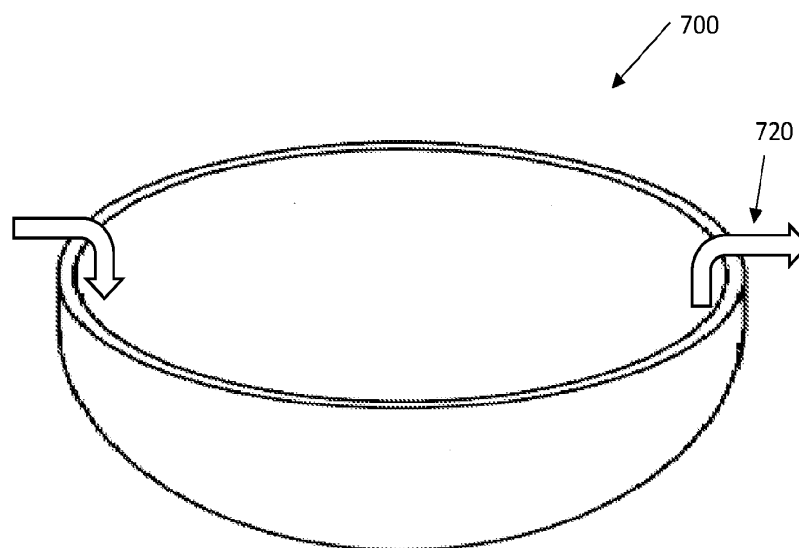


FIGURE 7A

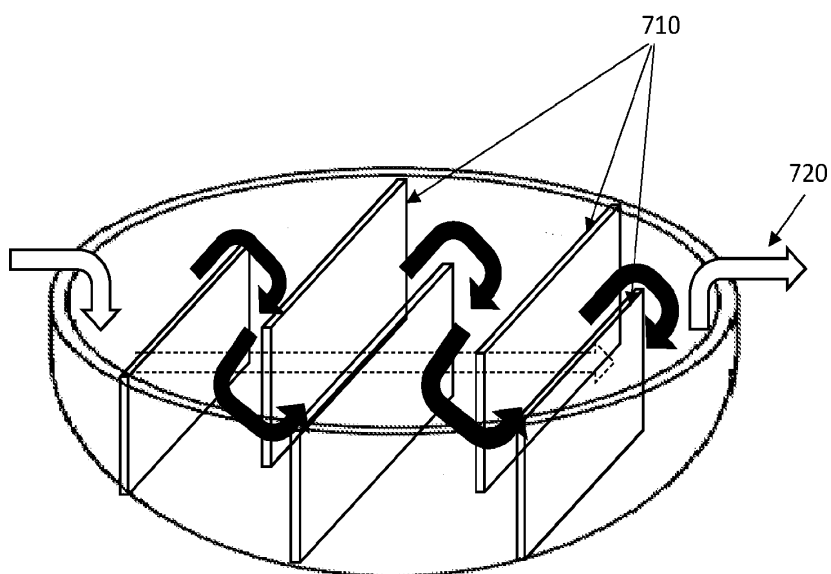


FIGURE 7B

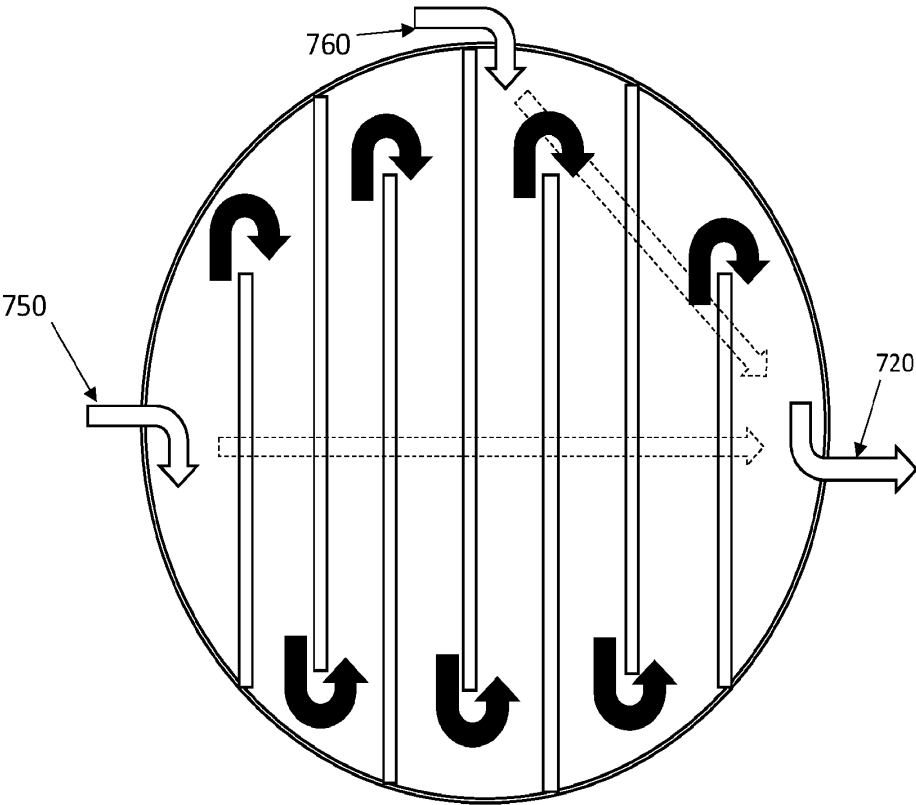


FIGURE 7C

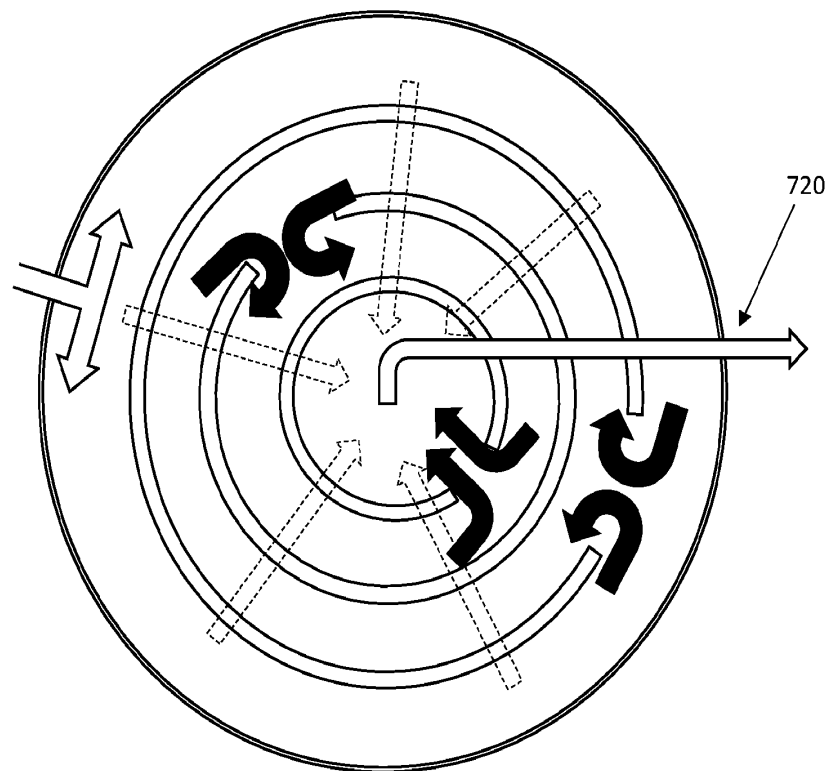


FIGURE 7D

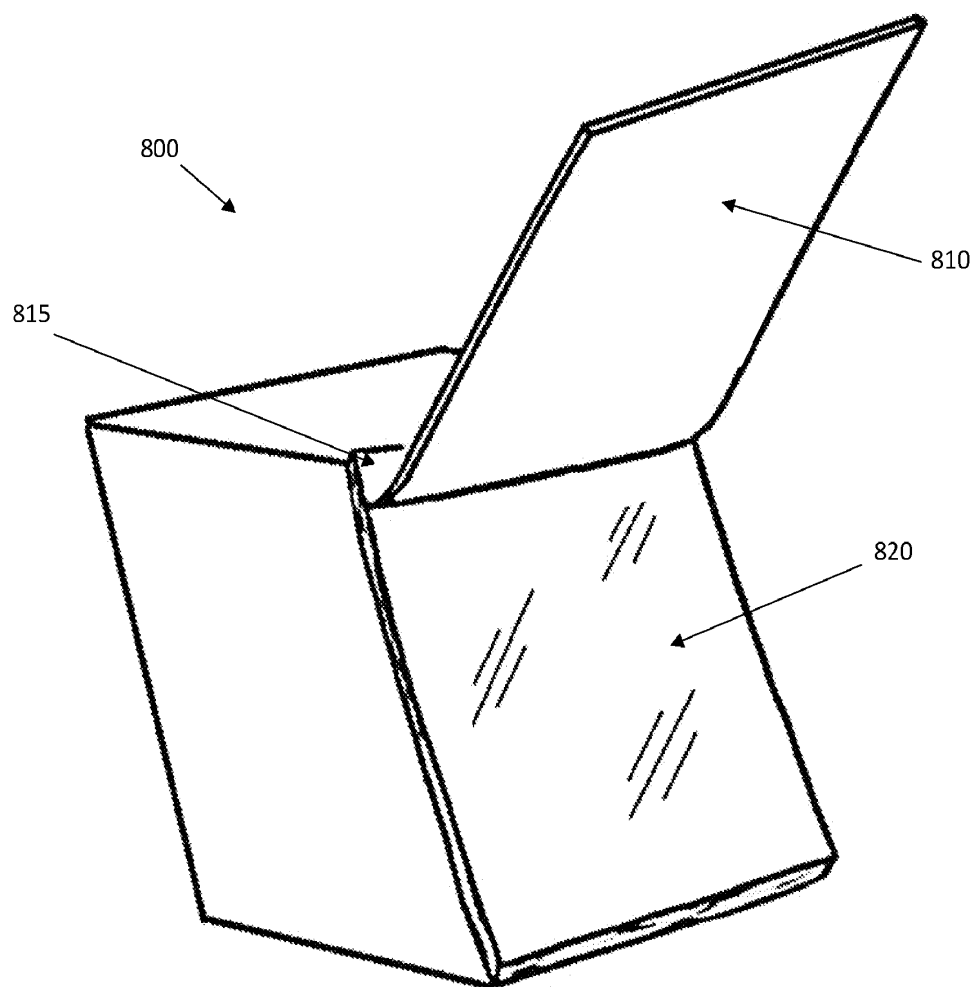


FIGURE 8

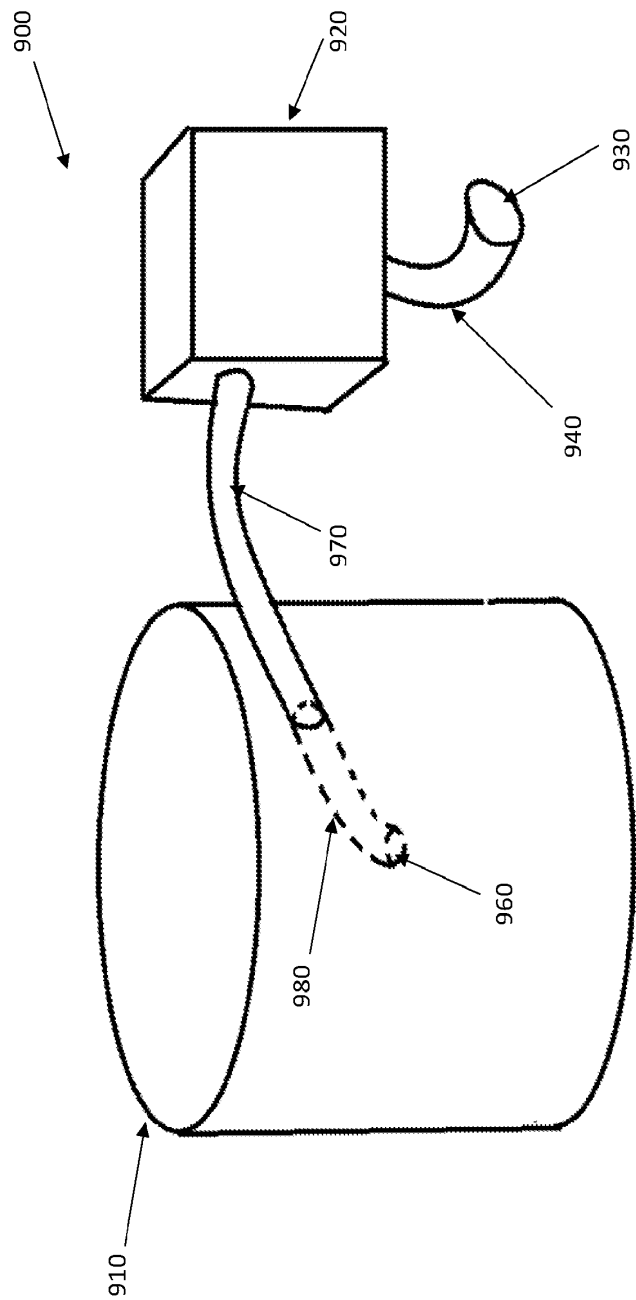
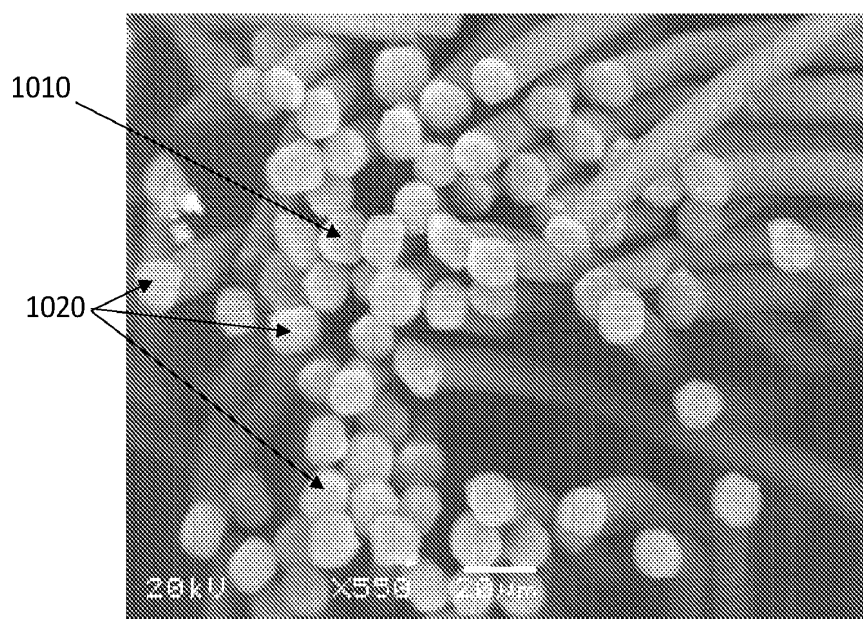
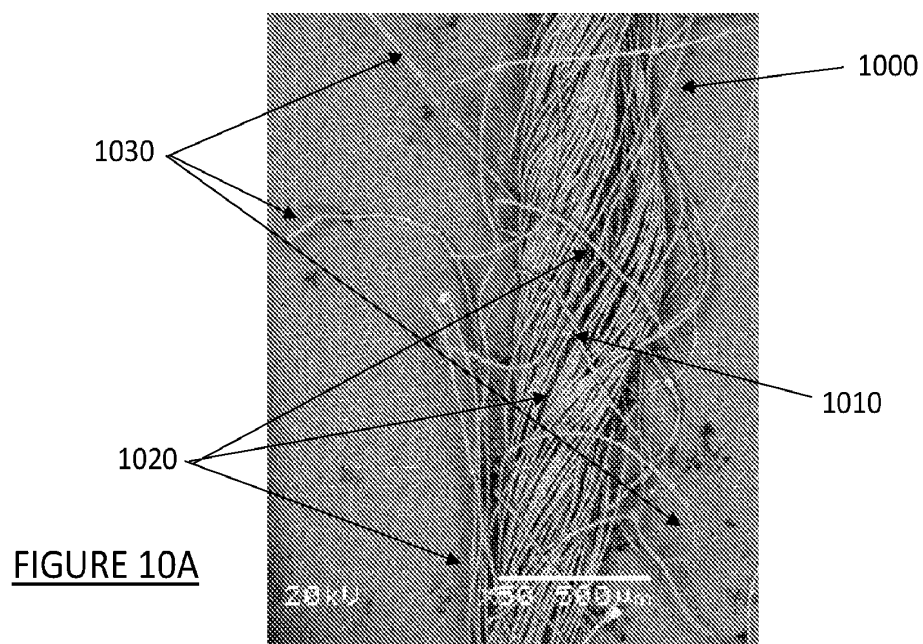
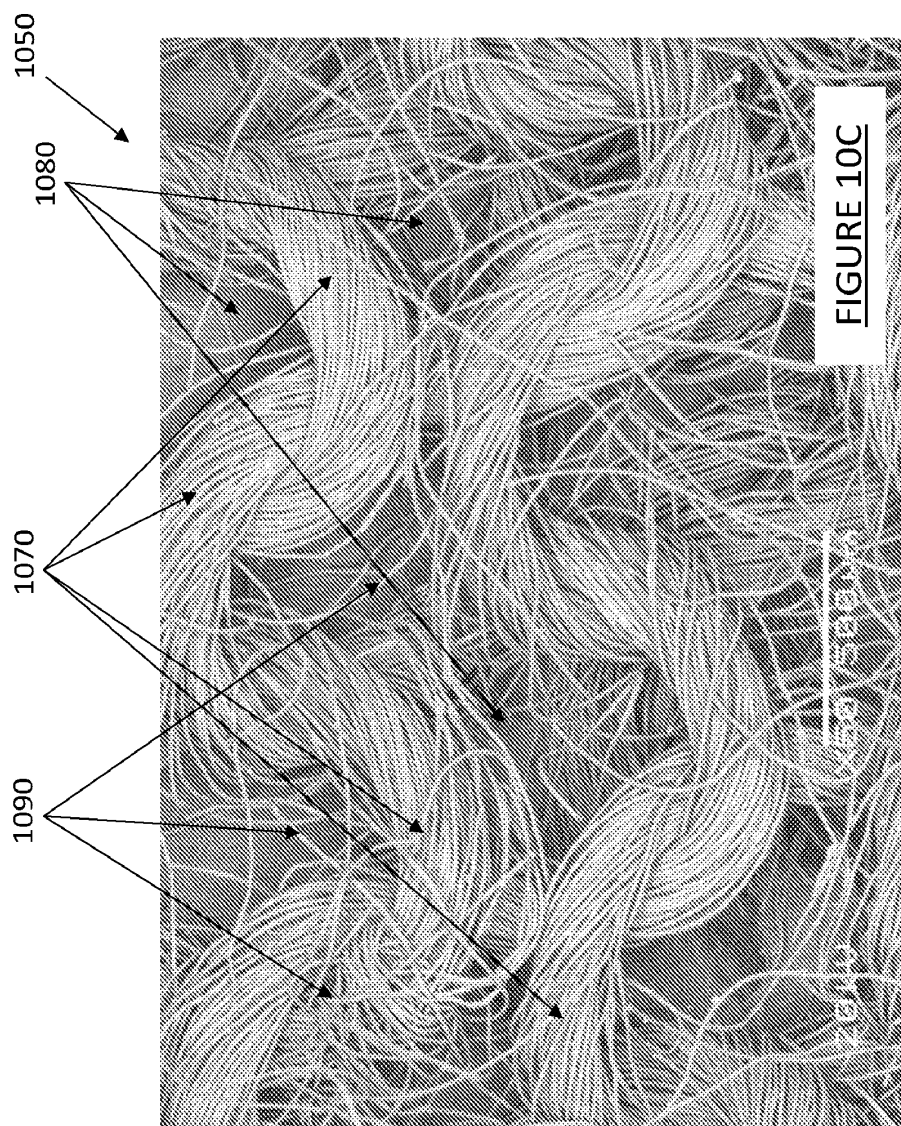


FIGURE 9

**FIGURE 10B**



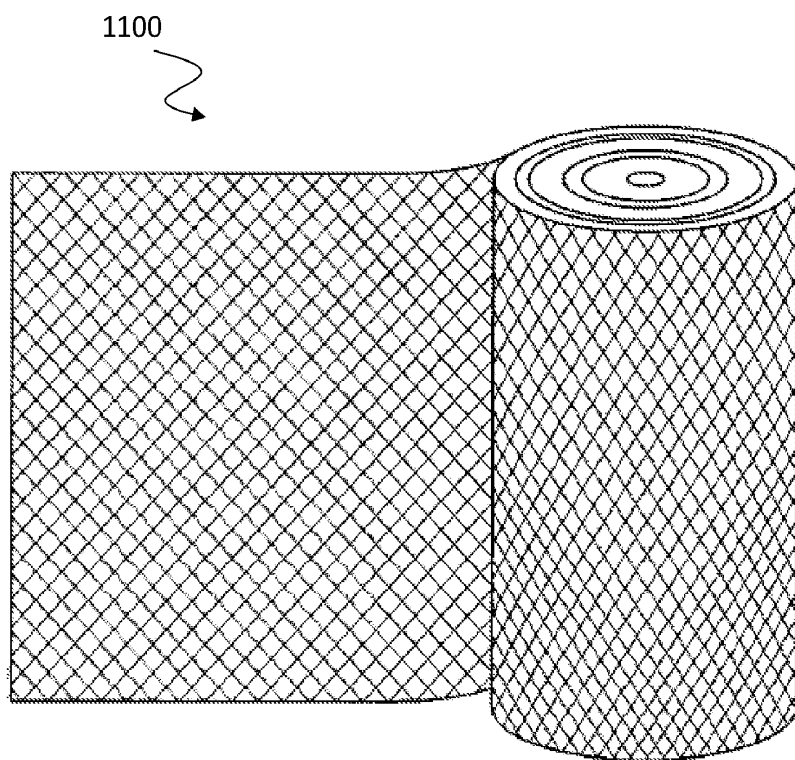


FIGURE 11A

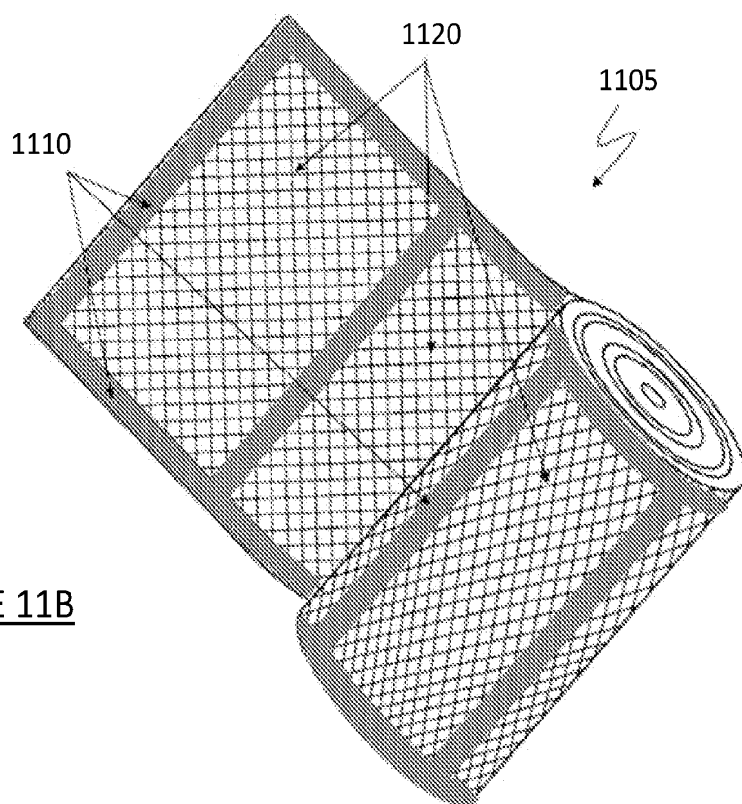


FIGURE 11B

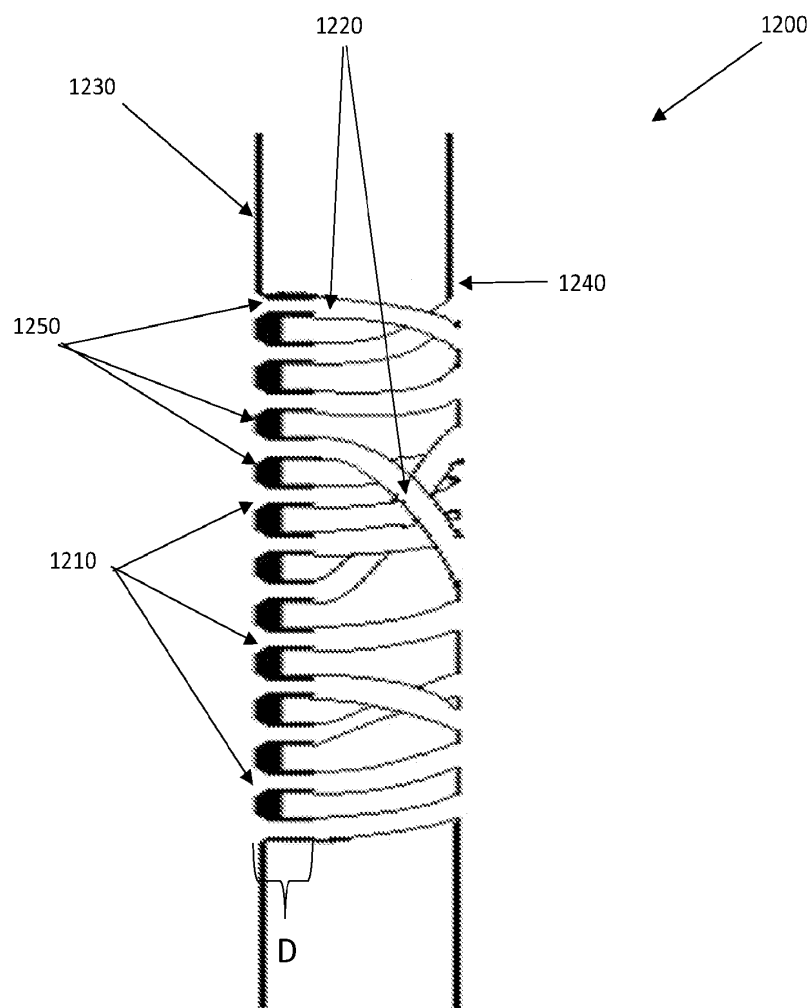


FIGURE 12

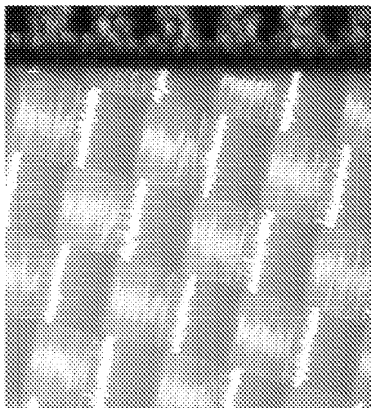


FIGURE 13A

**23x23 poly – solvent
based (SB) coating**

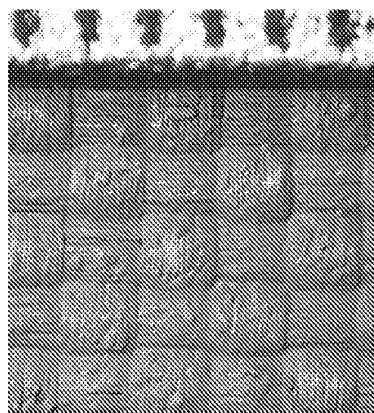


FIGURE 13B

Burlap - uncoated



FIGURE 14A

**burlap – solvent
based (SB) coating**



FIGURE 14B

**burlap – water based
(WB) coating**

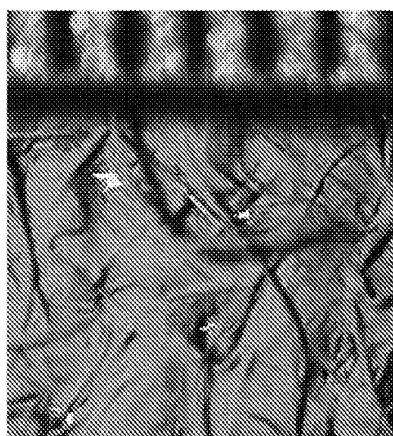


FIGURE 14C

FIGURE 15A

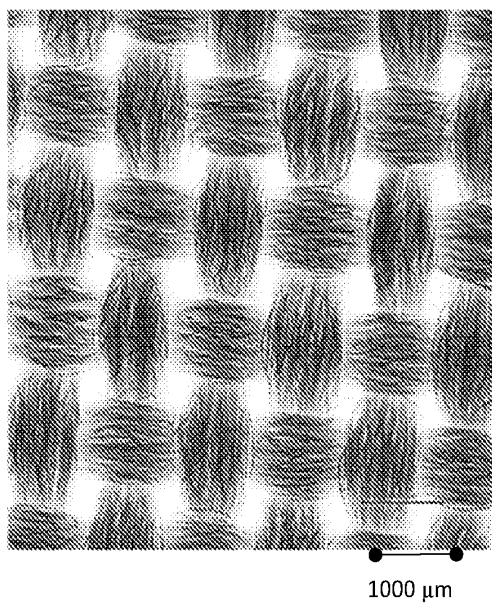


FIGURE 15B

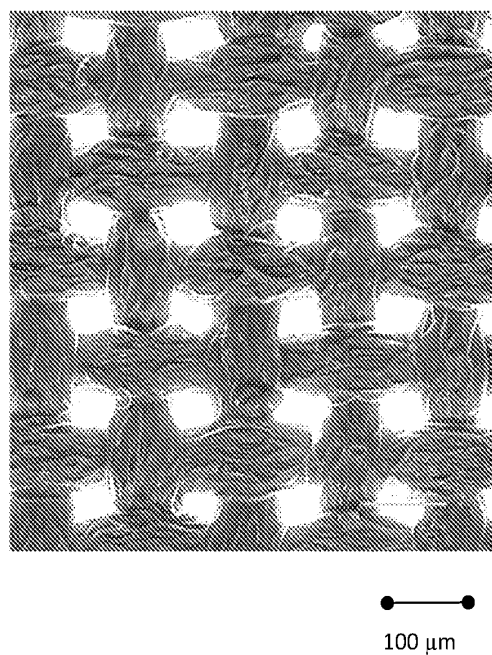


FIGURE 15C

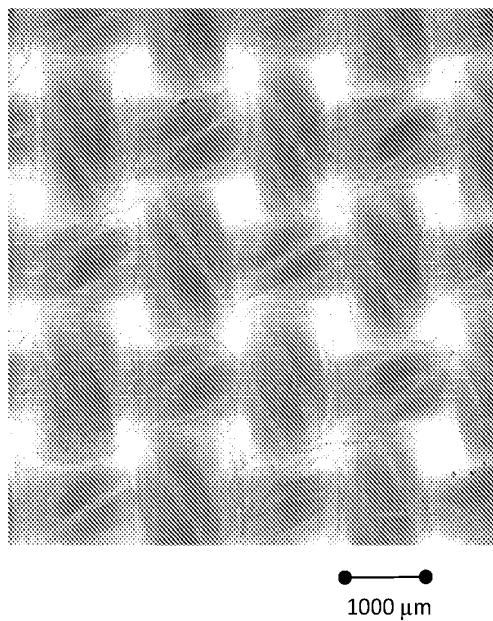


FIGURE 15D

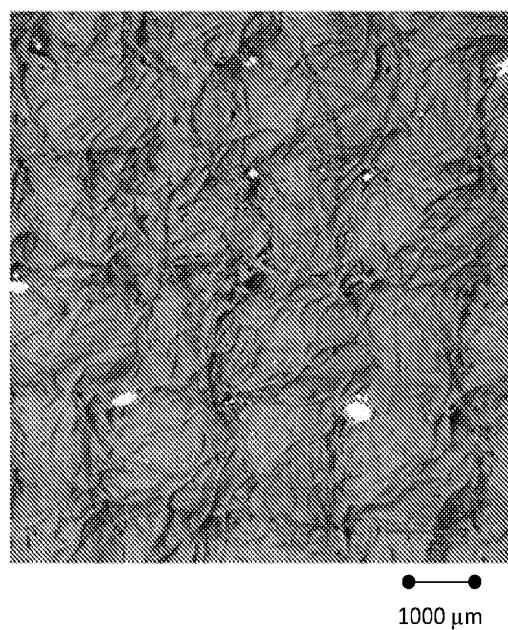


FIGURE 15E

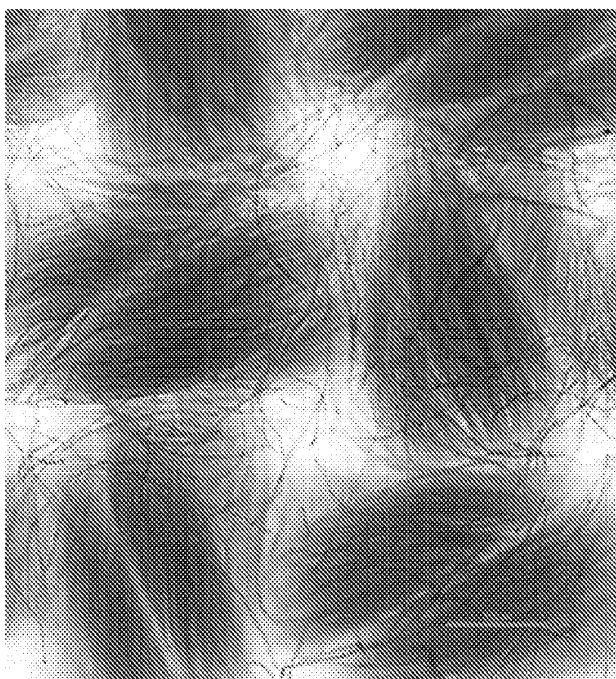
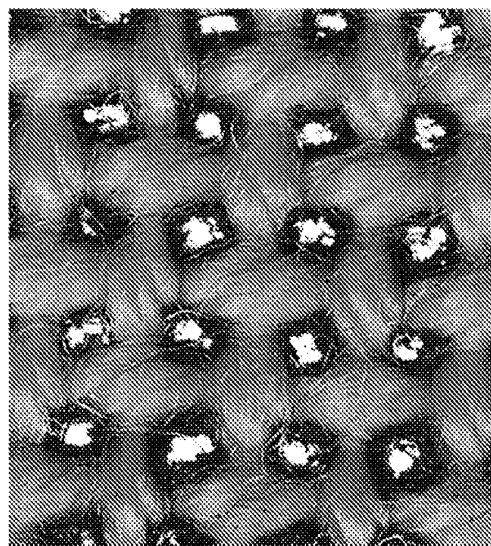


FIGURE 15F



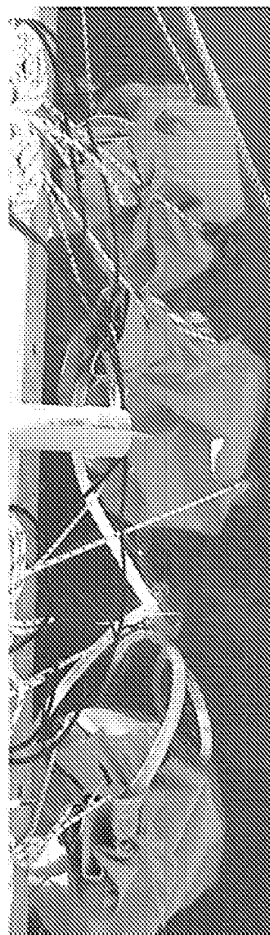
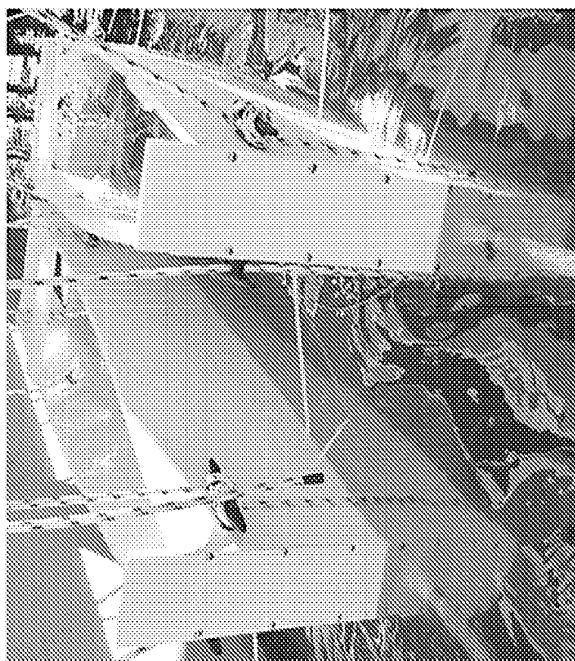
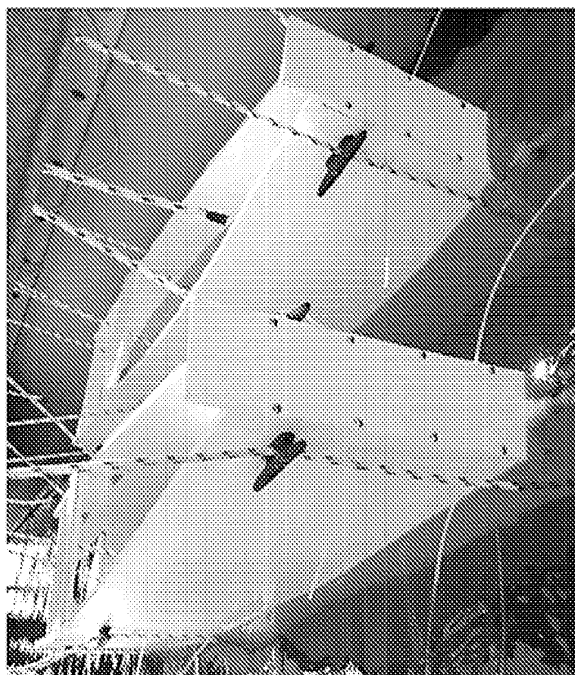


FIGURE 16

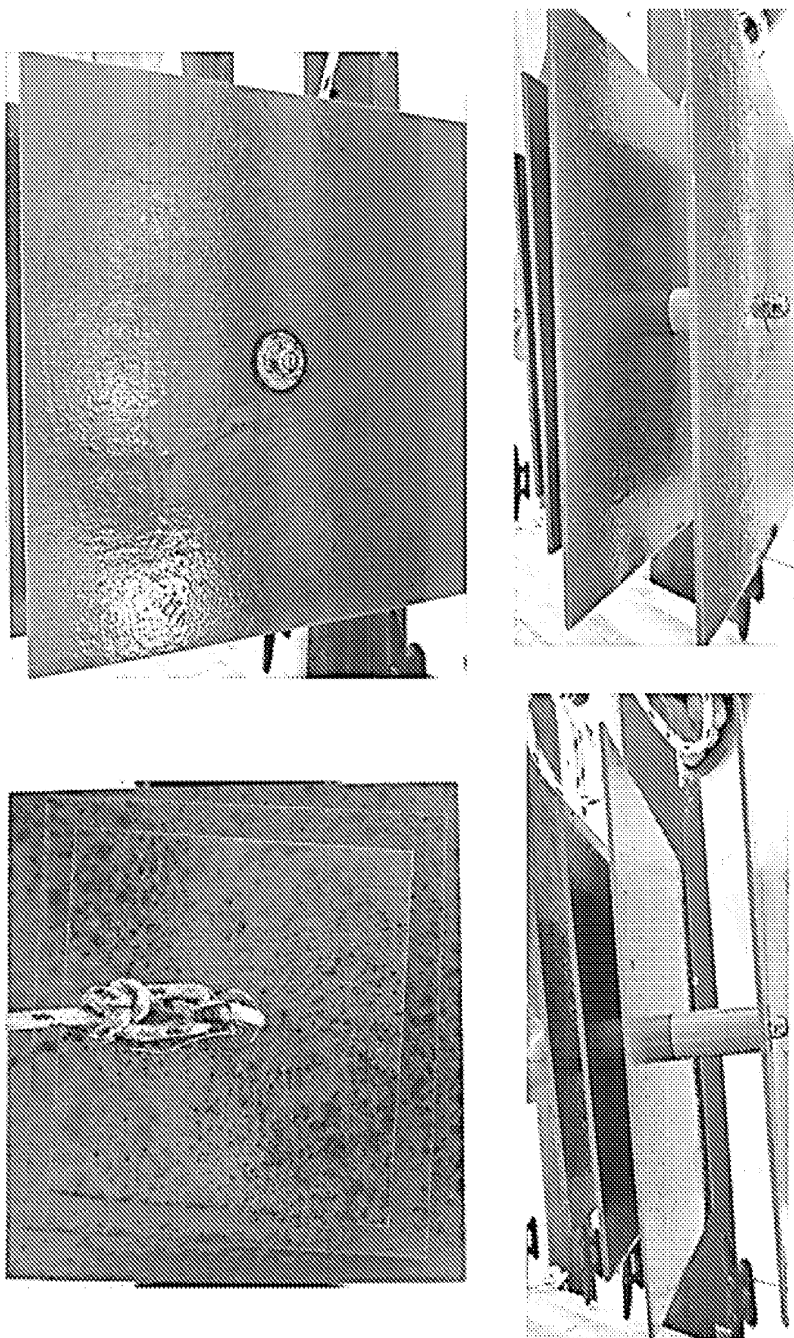


FIGURE 17A

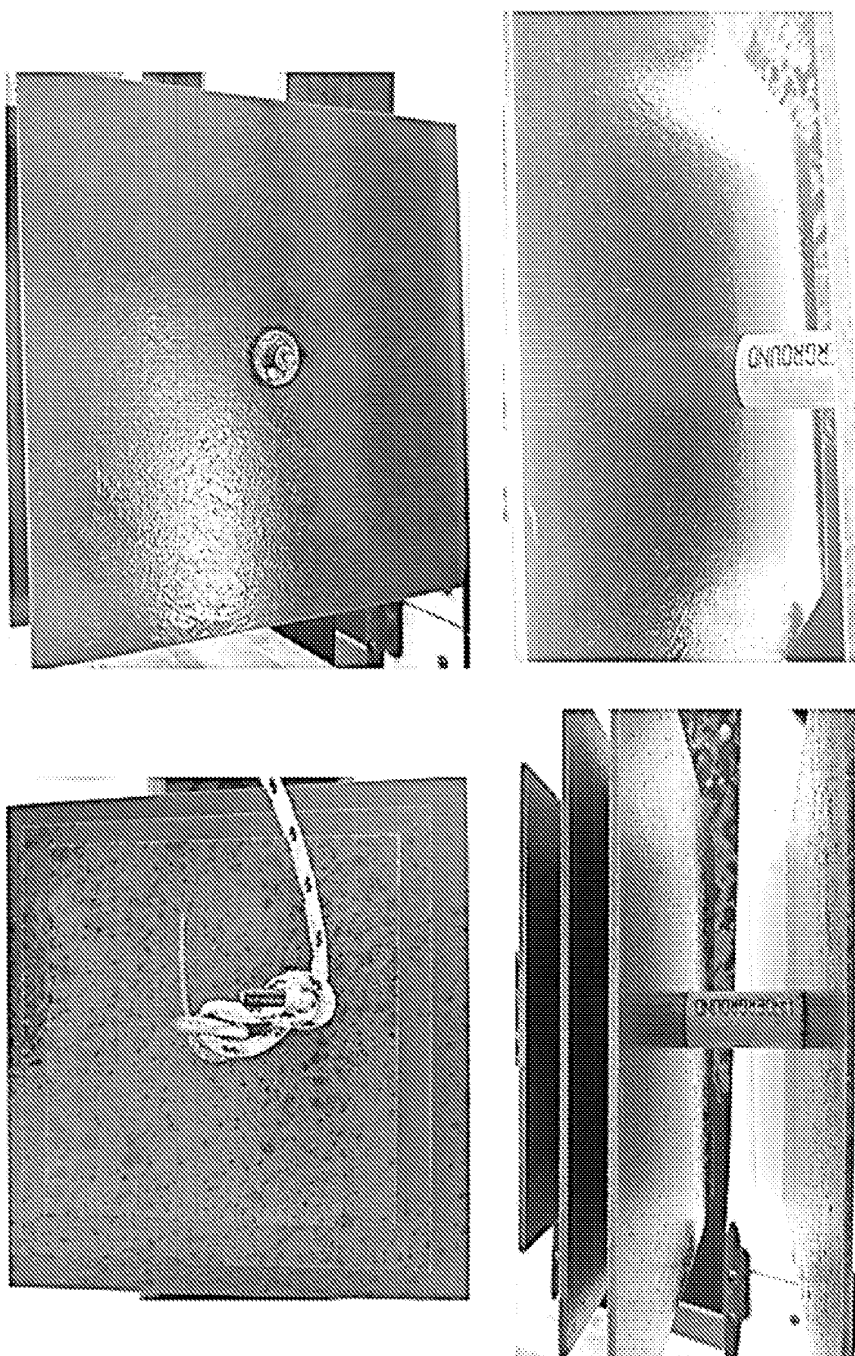


FIGURE 17B

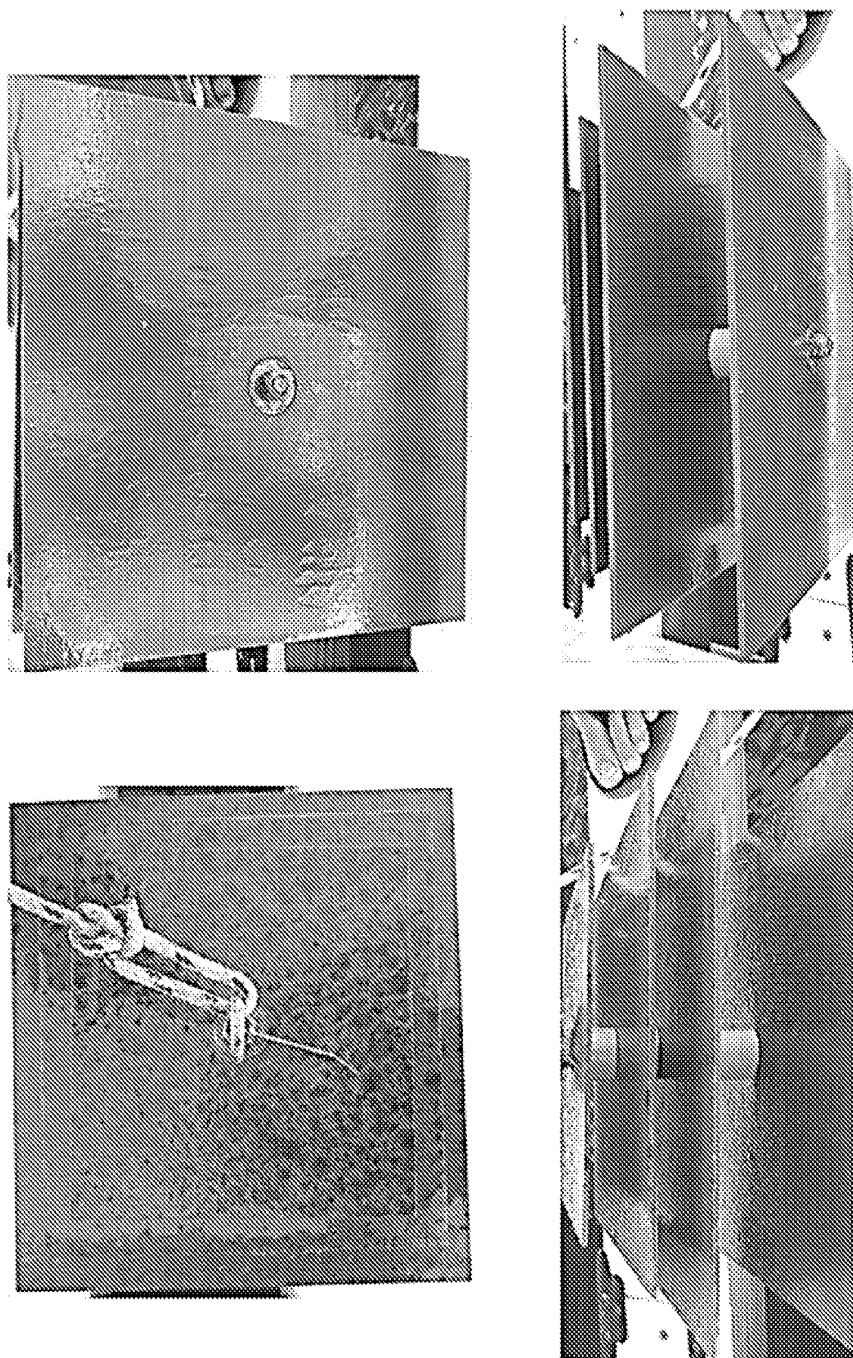


FIGURE 17C

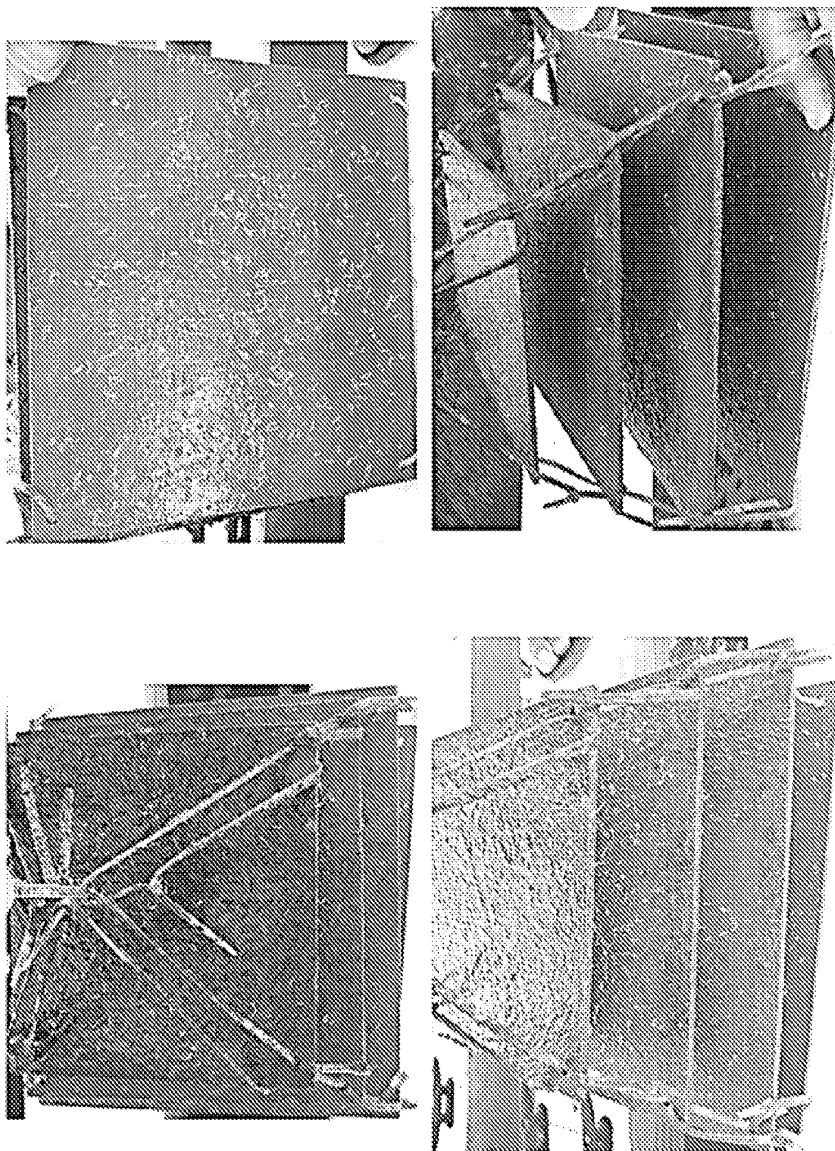


FIGURE 17D

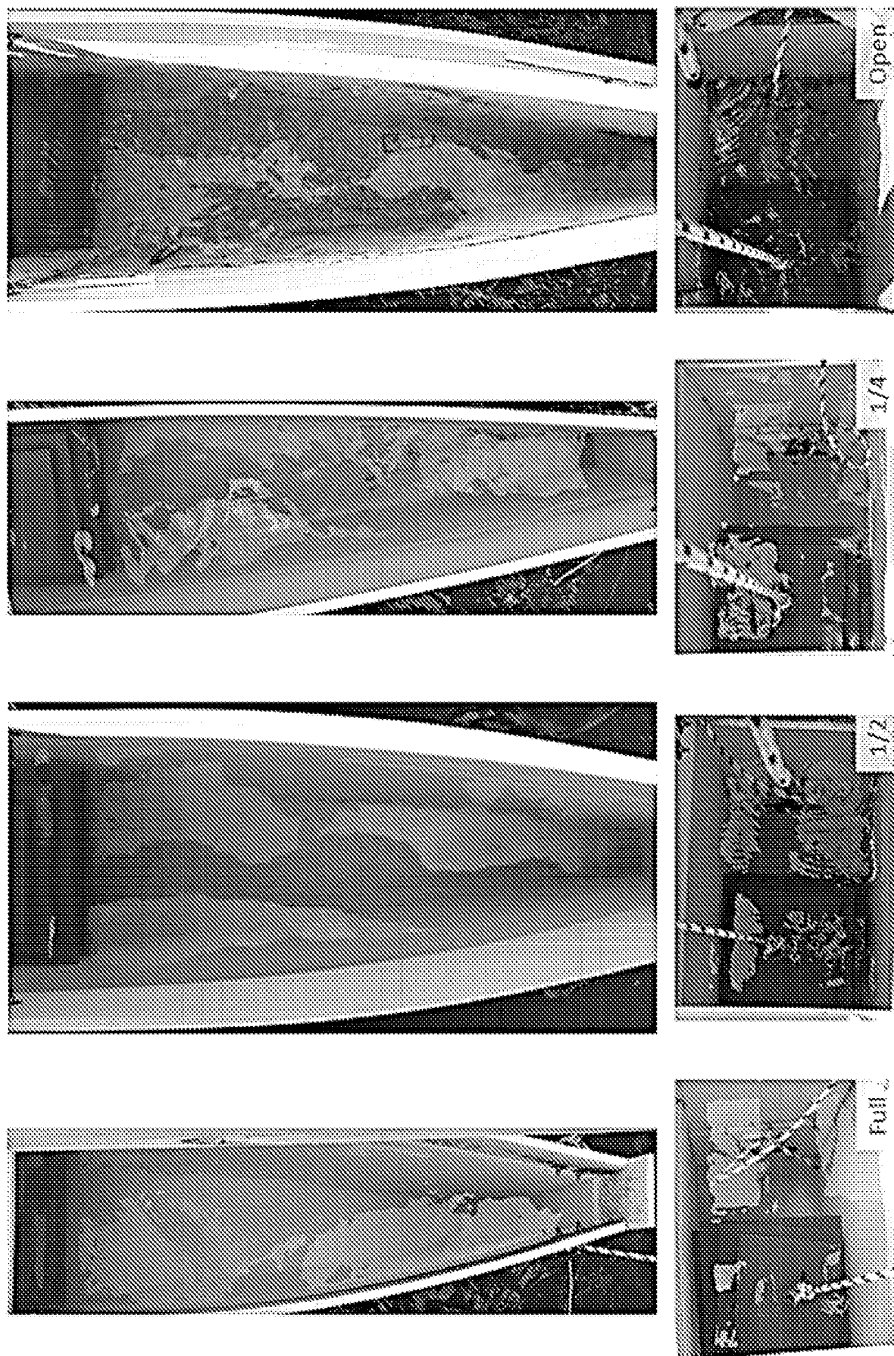


FIGURE 18

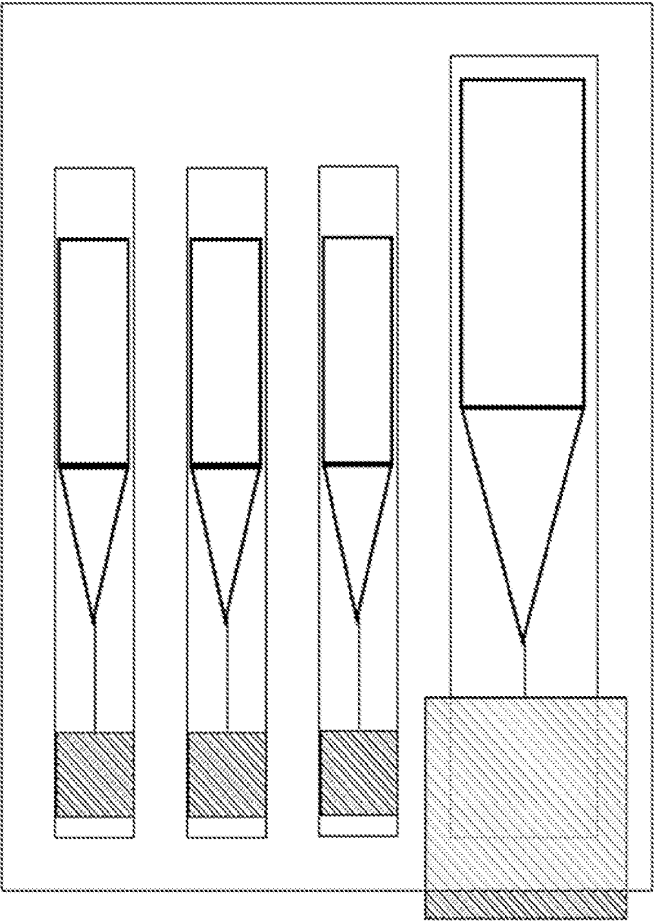
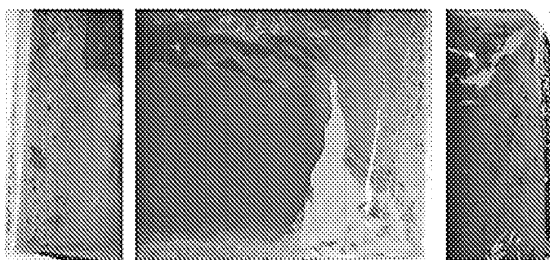
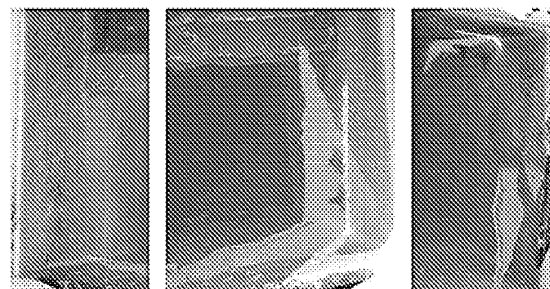


FIGURE 19

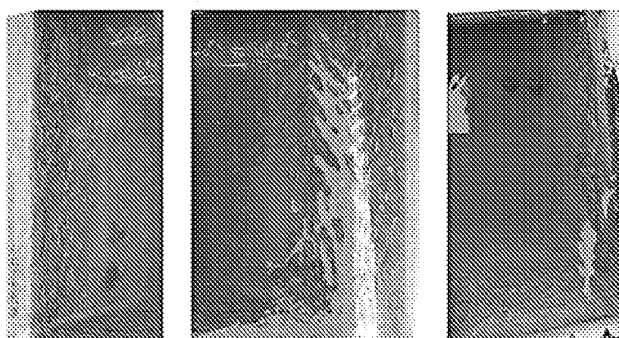
CONTROL



STANDARD



FAST
PUMP



LARGE
RACEWAY

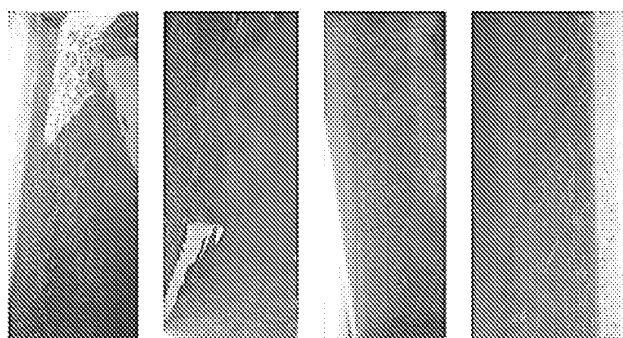
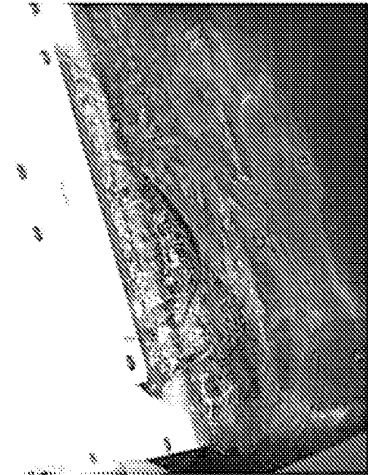
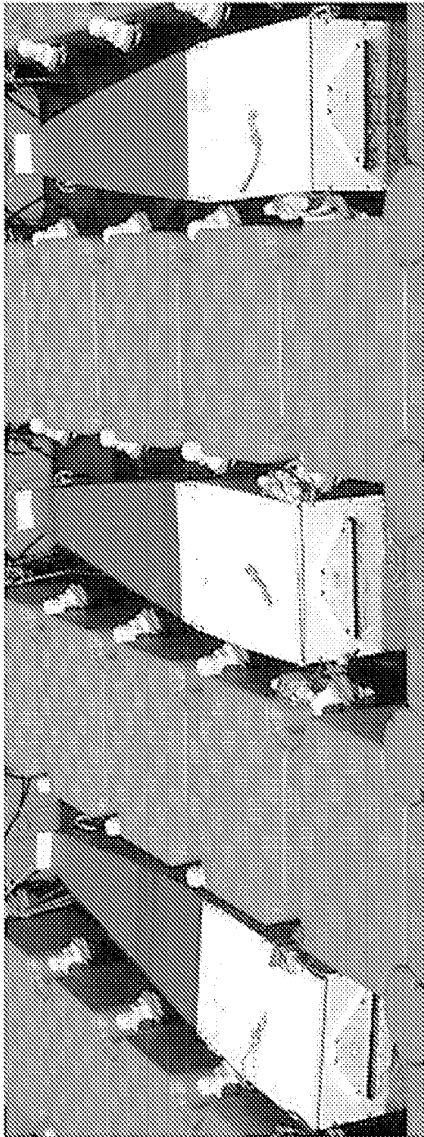
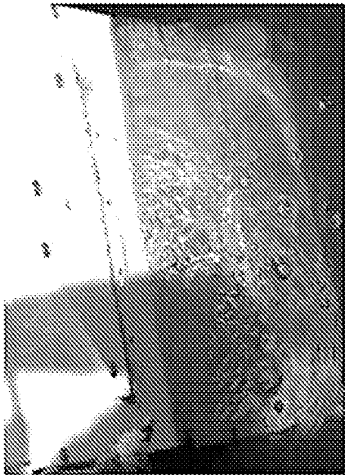


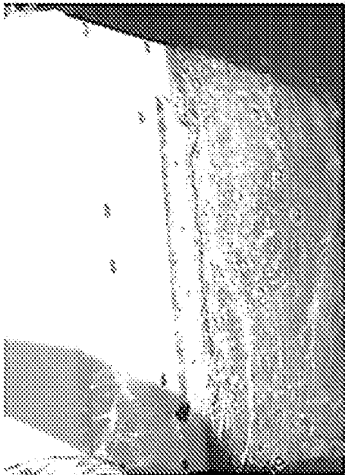
FIGURE 20A



1. Control



2. Standard



3. Fast Pump

FIGURE 20B

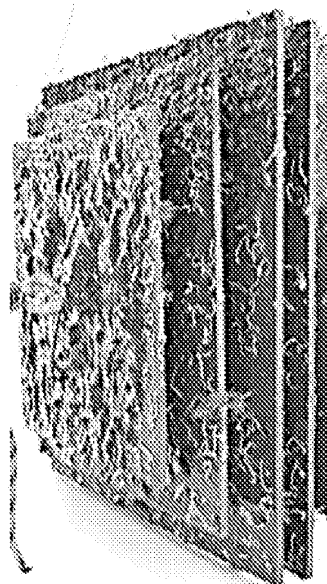
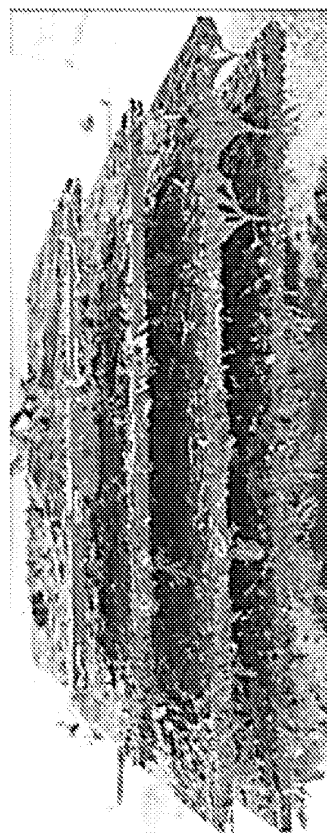
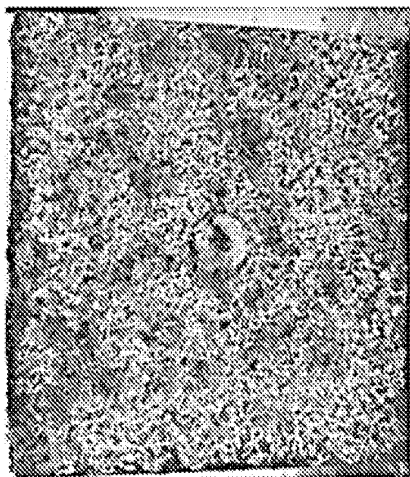
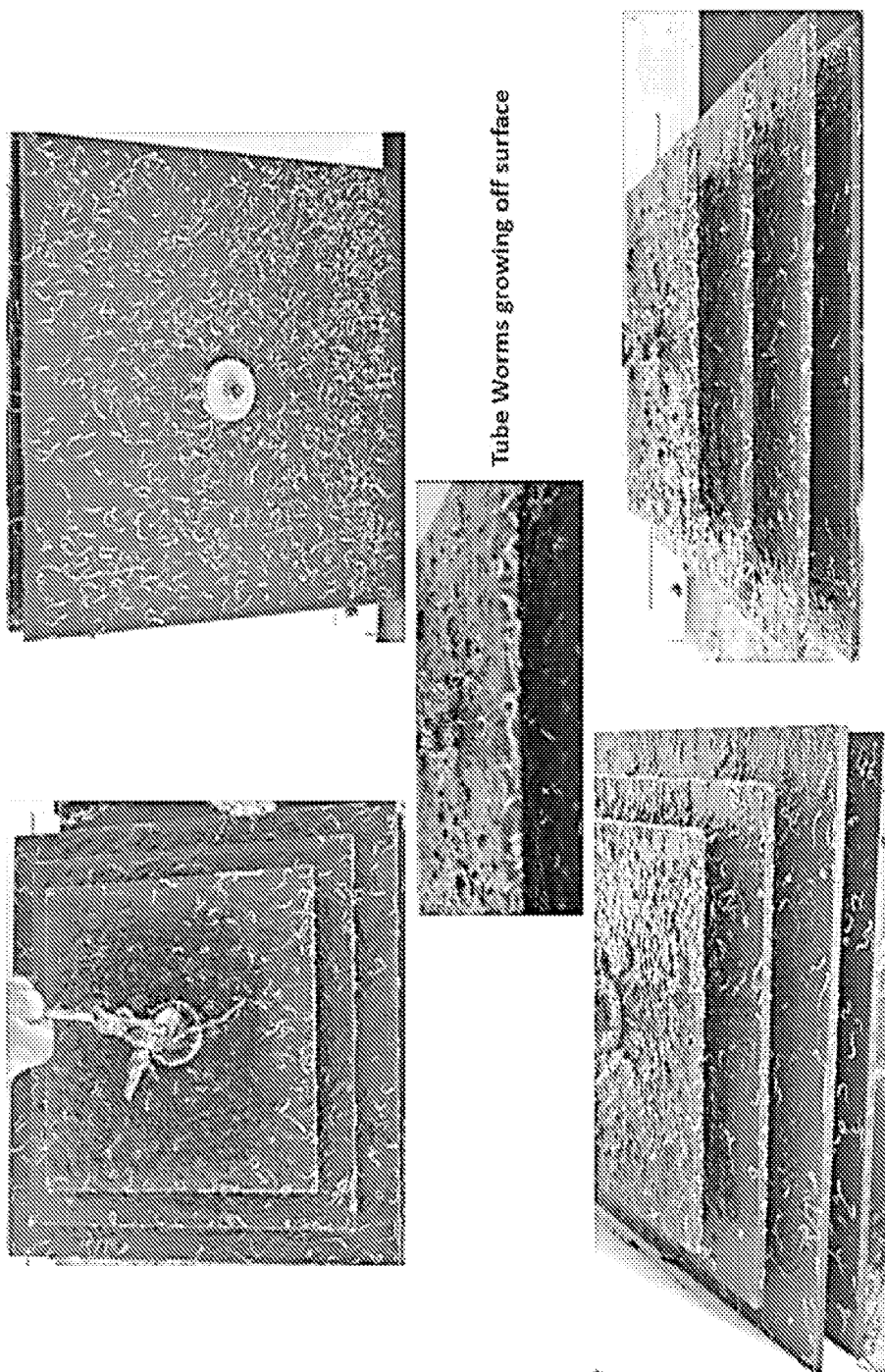


FIGURE 21A



Tube Worms growing off surface

FIGURE 21B

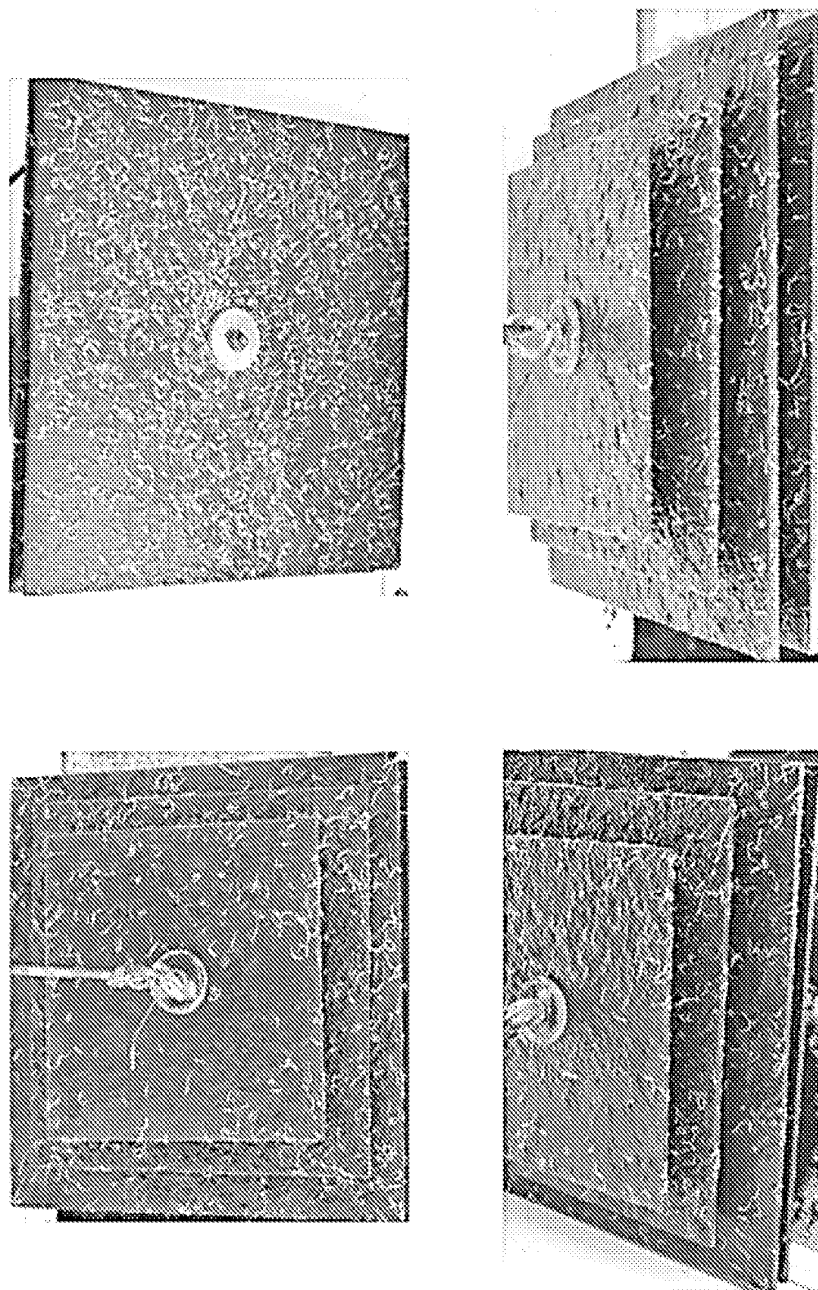


FIGURE 21C

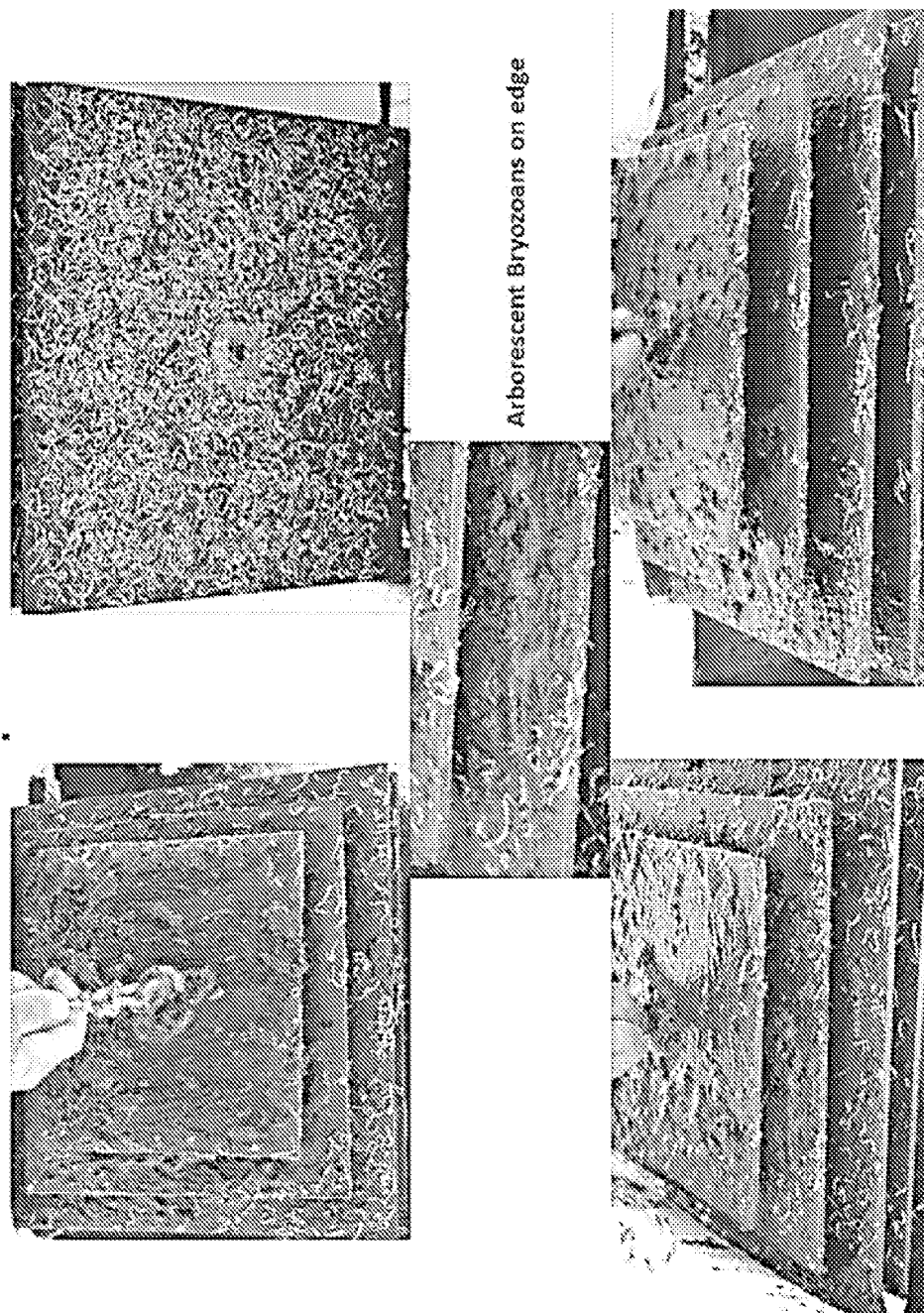


FIGURE 21D

Treatment	Pump Rate	Pump Rate (gal/hr)	Raceway Size	Raceway Volume (gal)	Box (sq ft)	Gal/sq ft/min	Dwell time (min)
1. Control	Low	228	Small	40	n/a	n/a	11
2. Standard	Low	182	Small	40	8.9	0.34	13
3. Fast Pump	High	641	Small	40	8.9	1.20	4
4. Large	High	588	Large	190	42.0	0.23	9

FIGURE 22A

	Temperature (°C)	Salinity (PPT)	DO (mg/L)	DO (%)	pH
3/10/2020, Day 3					
#0	19.3	34.7	7.33	95.8	8.36
#1	19.3	34.7	7.37	96.1	8.36
#2	19.3	34.9	7.35	95.8	8.36
#3	19.3	35	7.36	96.1	8.36
#4	19.3	35.1	7.36	96	8.36
3/13/2020, Day 6					
#0	21.6	35.7	8.24	112	8.37
#1	21.5	35.6	8.28	112.3	8.39
#2	21.5	35.6	8.16	110.7	8.38
#3	21.5	35.6	8.2	111.5	8.38
#4	21.4	35.7	7.99	108.2	8.38
3/20/2020, Day 13					
#0	24.4	32.9	8.12	15.8	8.38
#1	24	34.6	8.36	118.6	8.4
#2	24	34.9	8.31	117.9	8.4
#3	24.2	35	8.04	114.5	8.38
#4	24	35.1	8.16	115.7	8.4
3/27/2020, Day 20					
#0	24.9	38.4	7.3	105	8.39
#1	24.8	36.4	7.17	103.1	8.38
#2	24.8	36.4	7.09	102	8.39
#3	24.7	36.3	7.26	104.1	8.4
#4	24.7	36.4	7.08	101.6	8.39
4/3/2020, Day 26					
#0	24.9	37.7	7.39	106.3	8.45
#1	24.9	36.2	6.96	100.3	8.42
#2	24.9	36.3	7.03	101.3	8.43
#3	24.9	36.2	7.11	102.5	8.44
#4	24.9	36.3	7.06	101.7	8.44

FIGURE 22B

	Temperature (°C)	Salinity (PPT)	DO (mg/L)	DO (%)	pH
4/9/2020, Day 32					
#0	25.3	36.8	7.65	110.8	8.48
#1	25.2	35.6	6.49	94	8.41
#2	25.2	35.1	6.48	93.5	8.4
#3	25.2	35.2	6.9	100	8.43
#4	25.1	35.2	6.72	97.1	8.43
4/17/2020, Day 40					
#0	23.6	36.8	5.83	82.1	8.37
#1	23.6	34.2	5.3	74.6	8.34
#2	23.6	34.3	5.38	75.8	8.35
#3	23.7	34.3	5.46	77	8.35
#4	23.6	34.5	5.45	76.7	8.34
4/23/2020, Day 46					
#0	25.2	33.1	6.18	89.3	8.38
#1	25.2	34.5	5.42	78.5	8.34
#2	25.1	34.9	5.67	82	8.37
#3	25.2	34.9	5.93	86	8.38
#4	25.1	34.8	5.9	85.4	8.36
4/30/2020, Day 54					
#0	24.7	37.4	6.01	86.3	8.38
#1	24.8	35.7	5.17	74.3	8.37
#2	24.8	35.8	5.4	77.7	8.37
#3	24.8	35.8	5.58	80.2	8.38
#4	24.8	36	5.4	77.7	8.38

FIGURE 22C

	Ammonium (μM)	Nitrite (μM)	N+N (μM)	TDN (μM)	DON (μM)	Phosphate (μM)	Silica (μM)	Alkalinity (meg/L)	Alkalinity (MG/L CaCO ₃)
3/7/20									
0	2.5	<0.036	<0.179	14.0	11.5	0.17	4.7	1.33	67
1	2.7	<0.036	0.3	12.3	9.3	0.15	4.5	1.10	55
2	2.1	<0.036	<0.179	12.4	10.2	0.15	4.5	1.21	61
3	2.6	<0.036	<0.179	13.3	10.7	0.14	4.6	1.21	61
4	2.3	<0.036	<0.179	11.4	9.1	0.11	4.3	1.20	60
3/10/20									
0	2.2	<0.036	0.4	12.7	10.1	0.18	5.9	1.29	65
1	2.3	<0.036	0.4	22.7	20.0	0.16	5.9	1.17	59
2	2.4	<0.036	0.4	11.8	9.9	0.21	5.9	1.21	60
3	2.0	<0.036	0.4	11.4	9.9	0.18	6.0	1.30	65
4	2.4	<0.036	0.4	14.1	11.3	0.19	6.0	1.32	66
3/13/20									
0	1.5	-	<0.179	8.9	7.4	0.19	5.2	1.16	58
1	1.5	-	<0.179	8.7	7.2	0.15	5.2	1.32	66
2	1.7	-	<0.179	9.0	7.3	0.16	5.3	1.35	68
3	1.8	-	<0.179	8.8	7.0	0.15	5.3	1.25	63
4	1.6	-	<0.179	9.4	7.8	0.18	5.5	1.20	60
3/20/20									
0	1.5	-	<0.179	8.8	7.3	<0.04	3.8	1.40	70
1	1.2	-	<0.179	8.7	7.5	0.06	3.9	1.28	64
2	1.6	-	<0.179	9.0	7.3	0.06	4.0	1.37	69
3	1.8	-	<0.179	8.7	6.9	0.06	3.9	1.28	64
4	1.7	-	<0.179	9.0	7.3	<0.04	4.0	1.25	63
3/27/20									
0	2.0	-	<0.179	8.6	6.6	0.11	5.0	1.45	73
1	1.8	-	<0.179	8.9	7.1	0.09	4.8	1.26	63
2	3.0	-	<0.179	9.6	6.6	0.10	4.9	1.46	73
3	1.9	-	<0.179	8.2	6.3	0.05	4.8	1.27	64
4	2.4	-	<0.179	8.9	6.4	0.15	4.9	1.45	73
4/3/20									
0	1.8	-	<0.179	9.9	8.1	0.23	4.2	1.31	66
1	2.8	-	<0.179	10.4	7.7	0.22	4.2	1.40	70
2	3.4	-	<0.179	10.7	7.4	0.18	3.9	1.24	62
3	2.4	-	<0.179	9.9	7.4	0.19	4.0	1.47	74
4	2.6	-	<0.179	10.1	7.5	0.19	4.0	1.24	62
4/9/20									
0	2.1	-	<0.179	9.9	7.9	0.10	5.9	1.31	66
1	5.3	-	<0.179	13.5	8.2	0.20	6.2	1.27	64
2	5.6	-	<0.179	13.6	7.9	0.25	6.0	1.34	67
3	4.3	-	<0.179	12.6	8.4	0.17	6.1	1.51	76
4	5.3	-	<0.179	13.9	8.6	0.21	5.9	1.27	64

FIGURE 22D

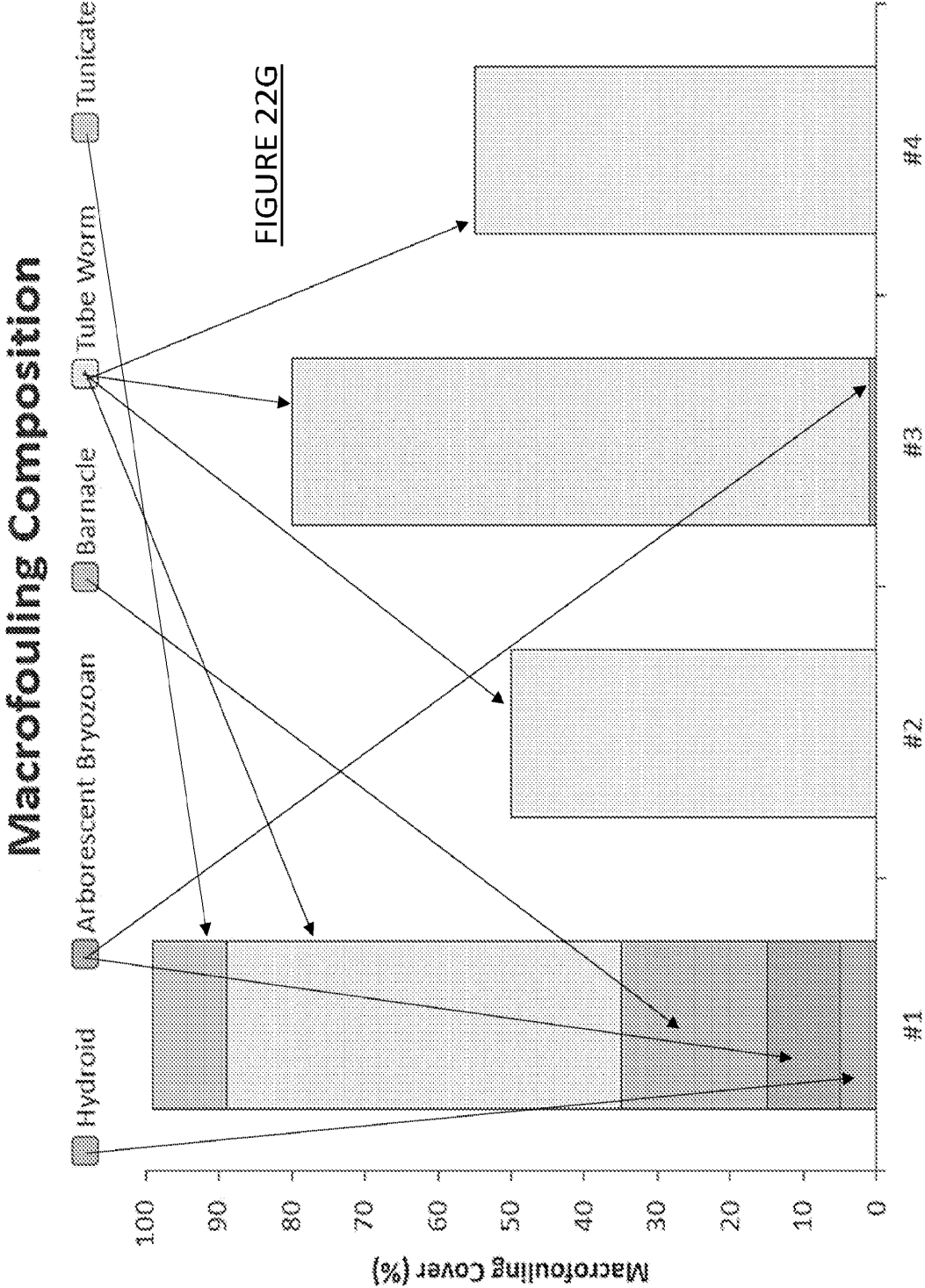
Note: From 3/13 on N+N was below detection levels so Nitrite was not calculated

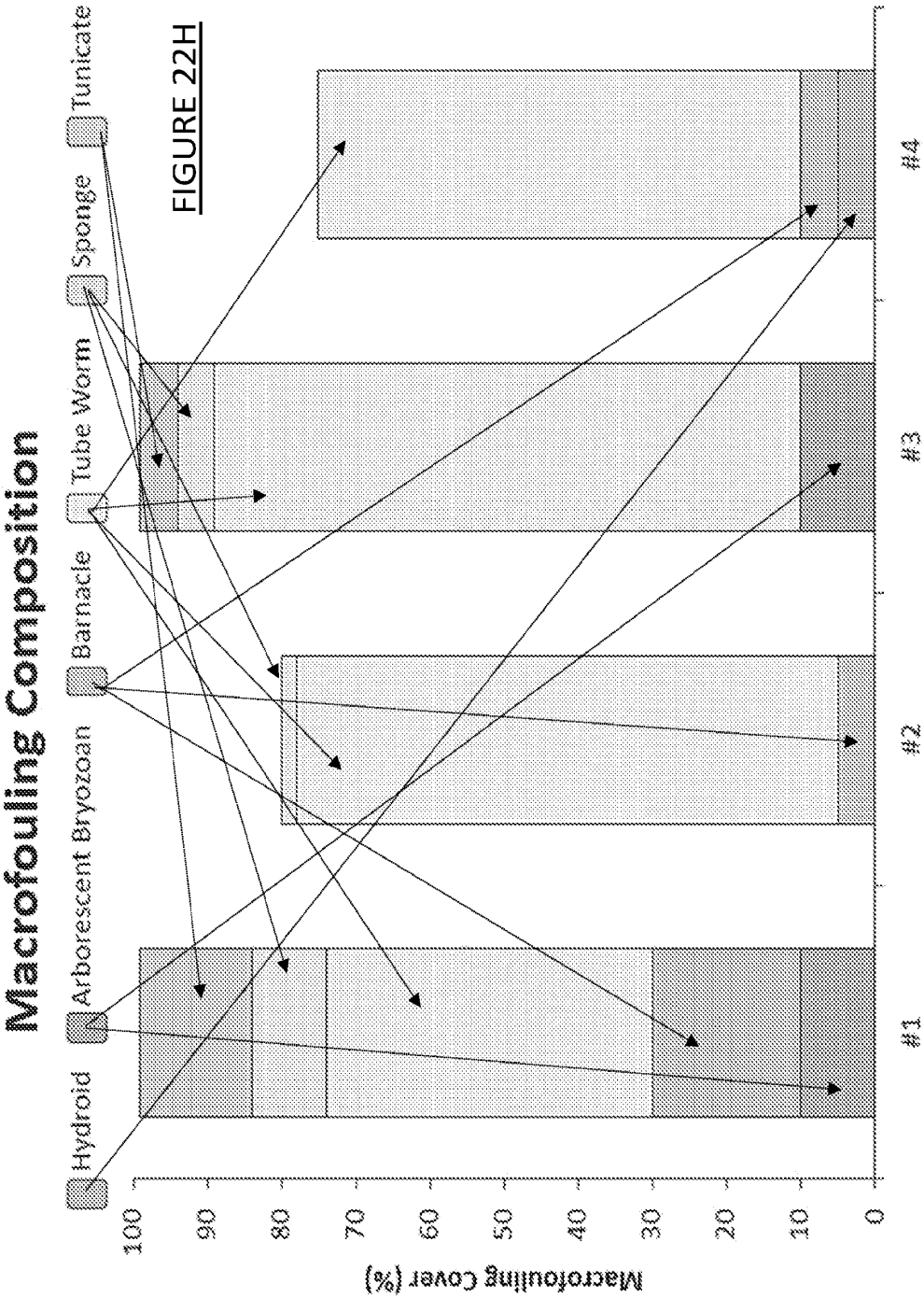
Treatment	Macrofouling	Hydroid	Arborescent Bryozoan	Barnacle	Tube Worm	Tunicate
#1	99	5	10	20	54	10
#2	50	0	0	0	50	0
#3	80	0	1	0	79	0
#4	55	0	0	0	55	0

FIGURE 22E

Treatment	Macrofouling	Hydroid	Arborescent Bryozoan	Barnacle	Tube Worm	Sponge	Tunicate
#1	99	0	10	20	44	10	15
#2	80	0	0	5	73	2	0
#3	99	0	10	0	79	5	5
#4	75	5	0	5	65	0	0

FIGURE 22F





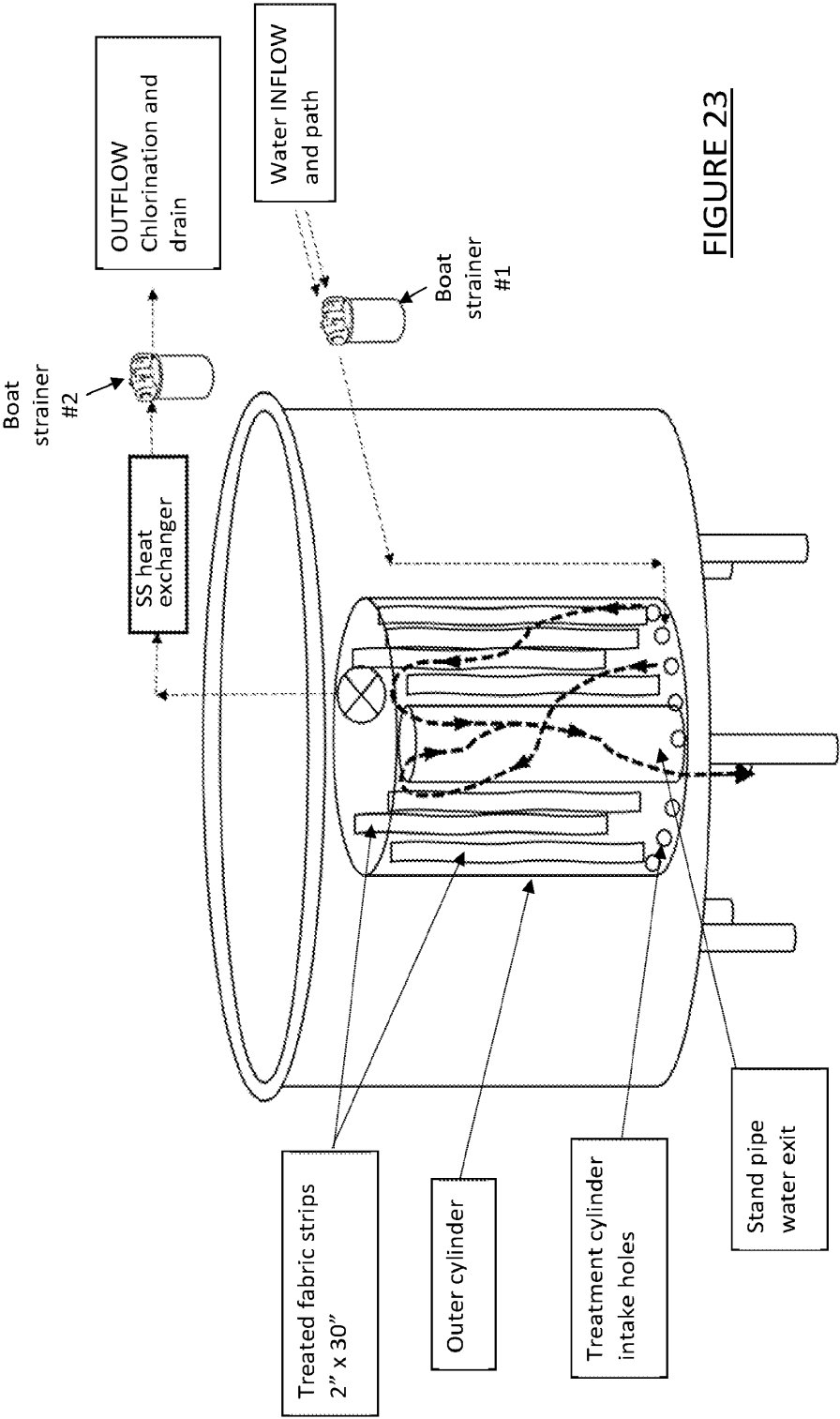


FIGURE 23

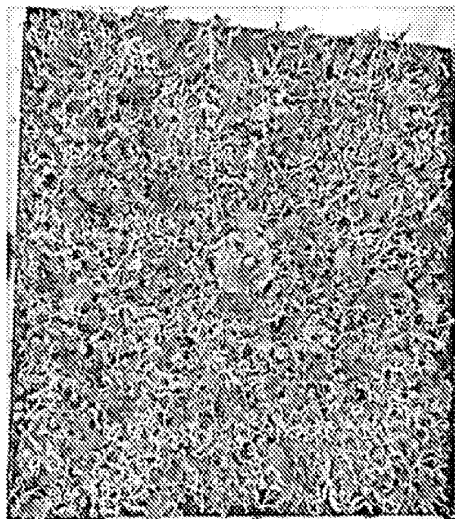
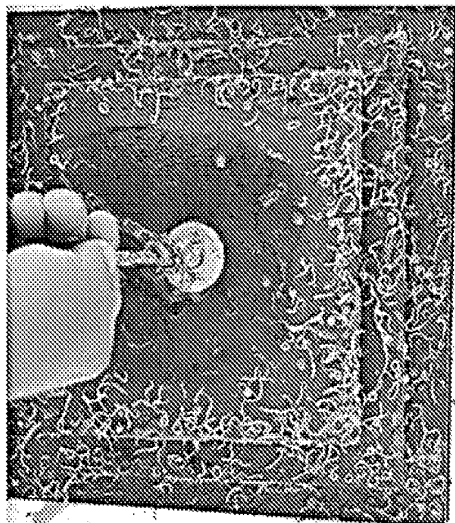


FIGURE 24A



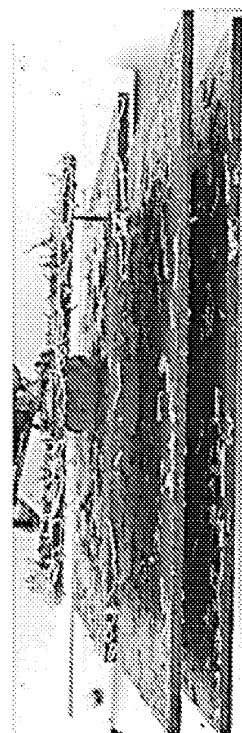
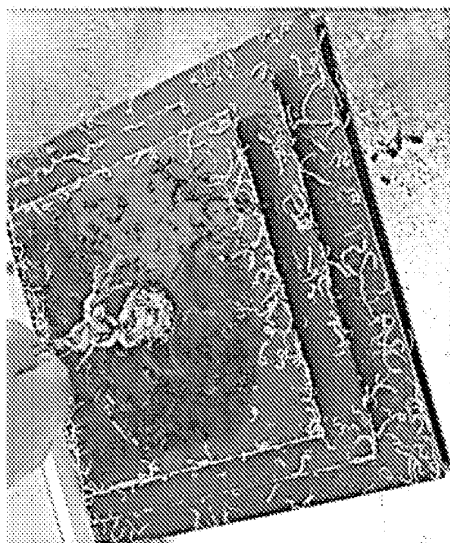
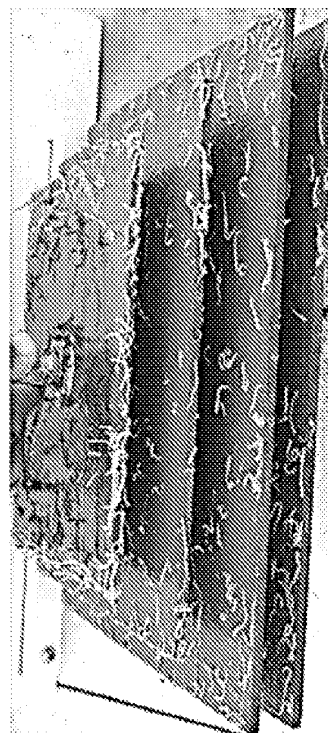
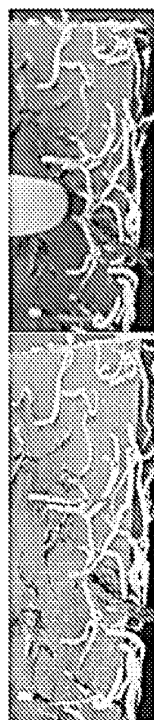
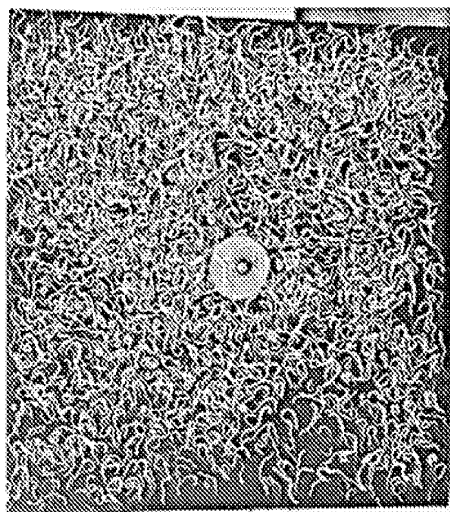


FIGURE 24B

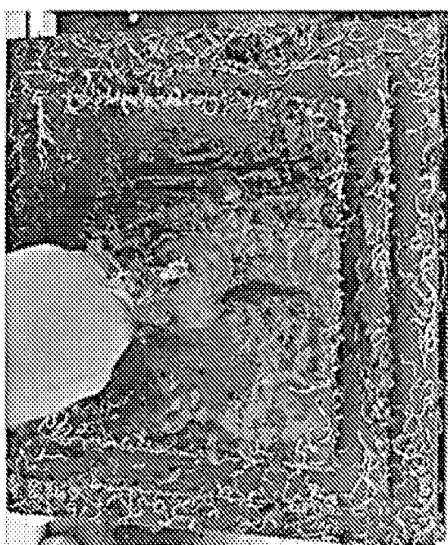
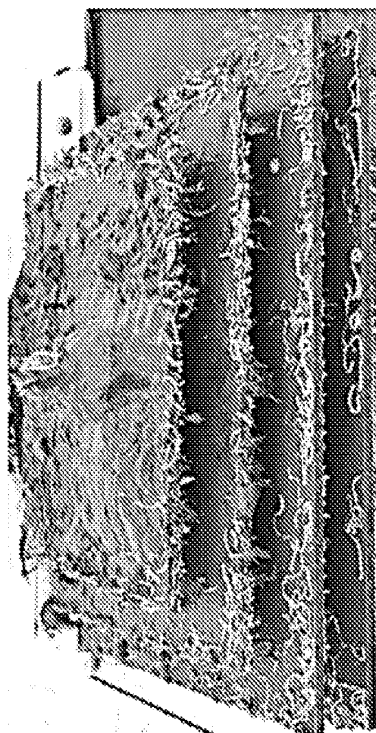
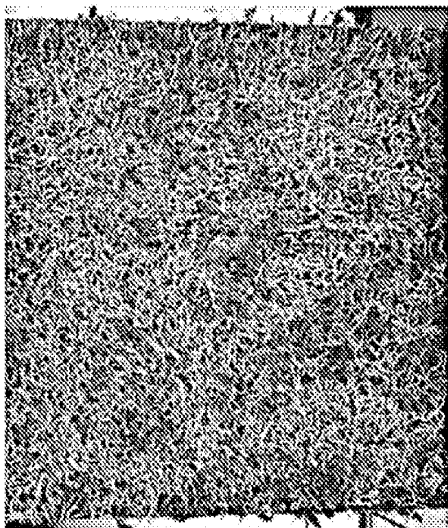
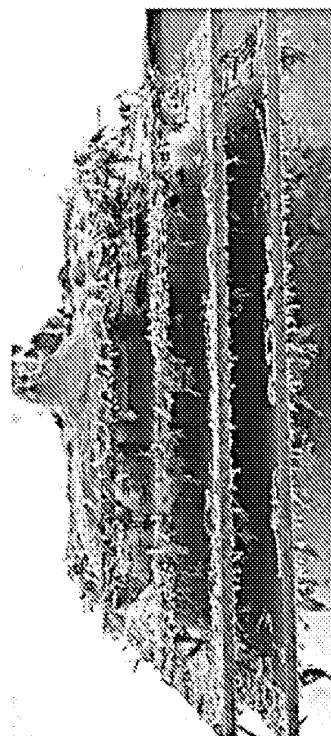


FIGURE 24C



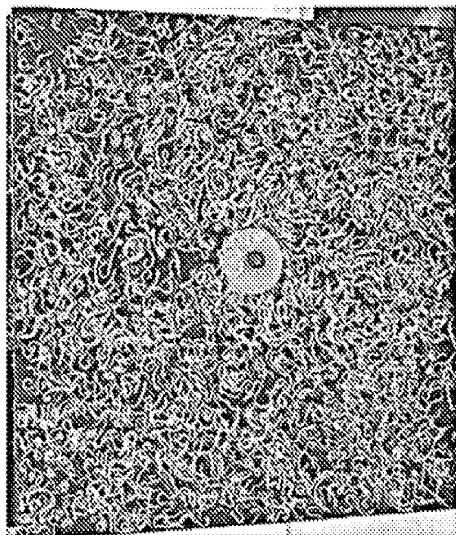
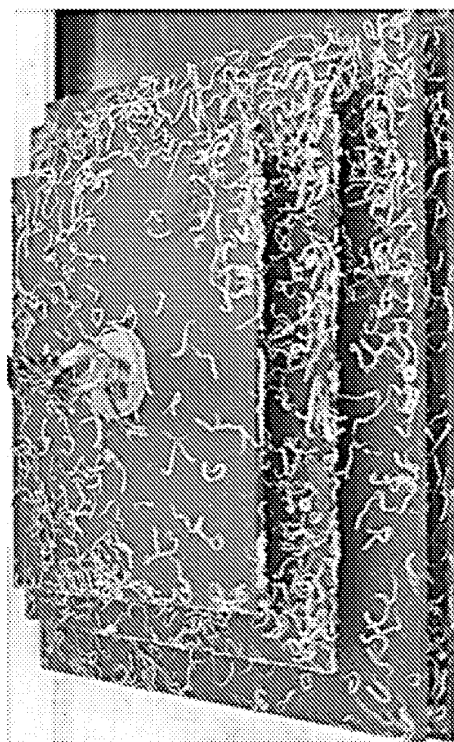
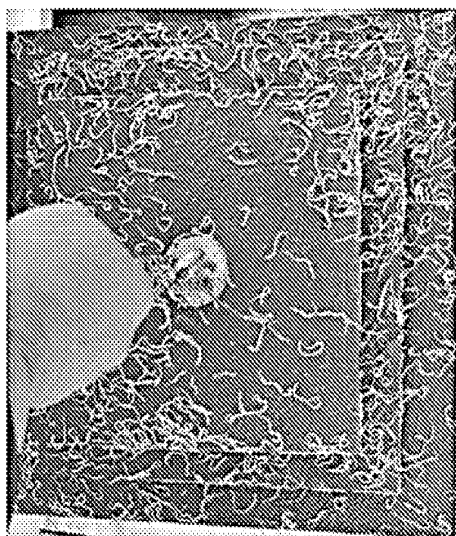
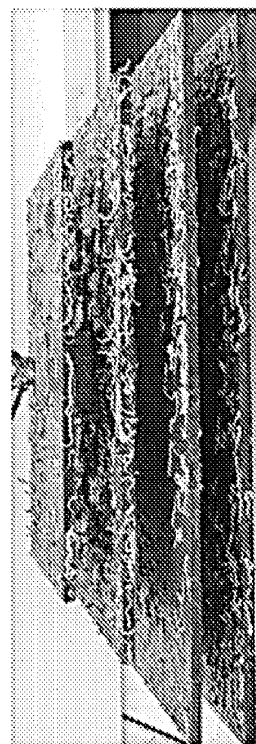
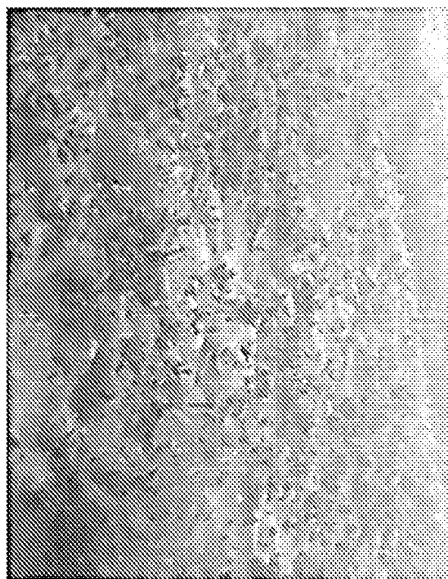


FIGURE 24D





Pump Housing



CanDock



Raceway



Raceway

FIGURE 25A

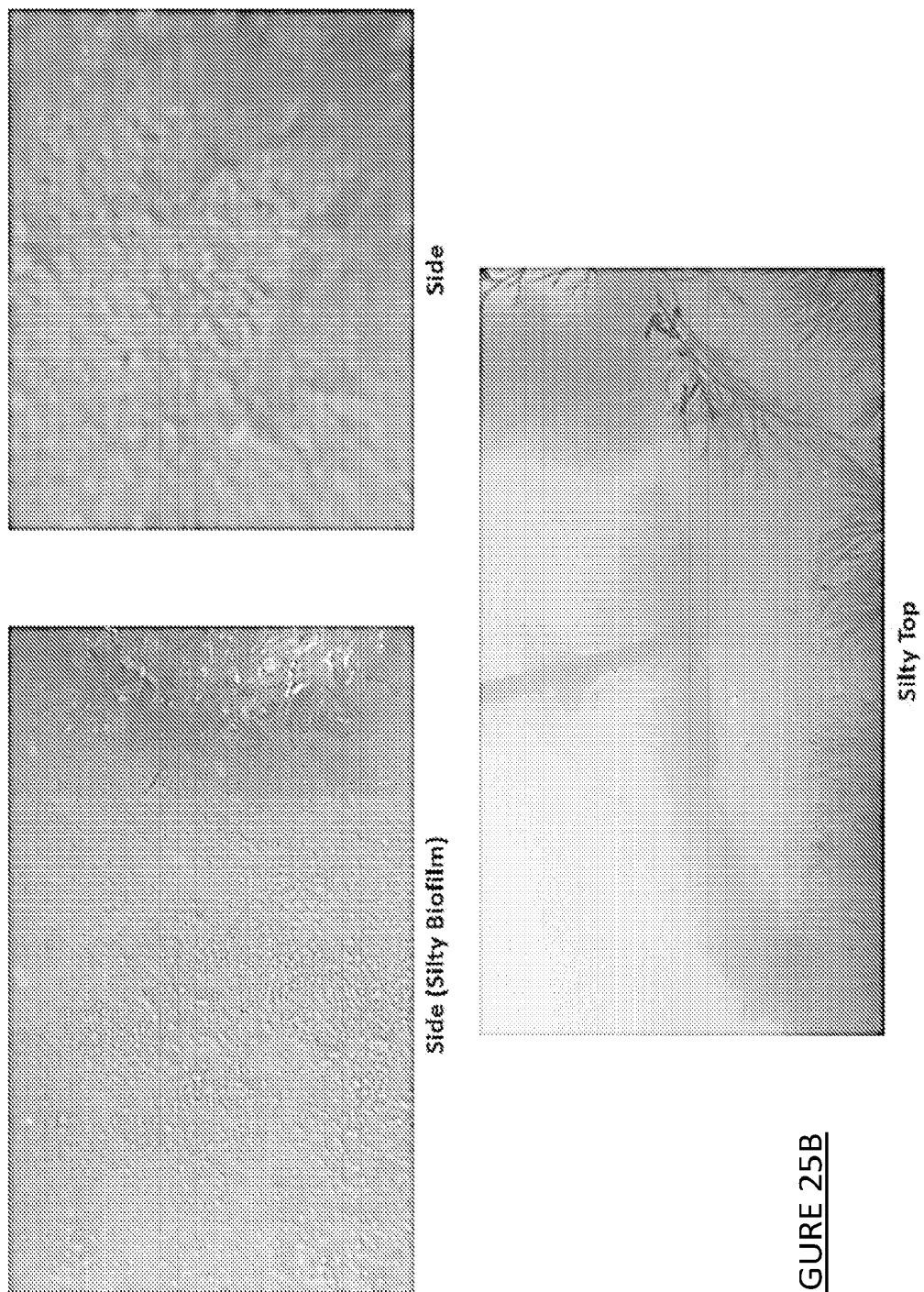


FIGURE 25B

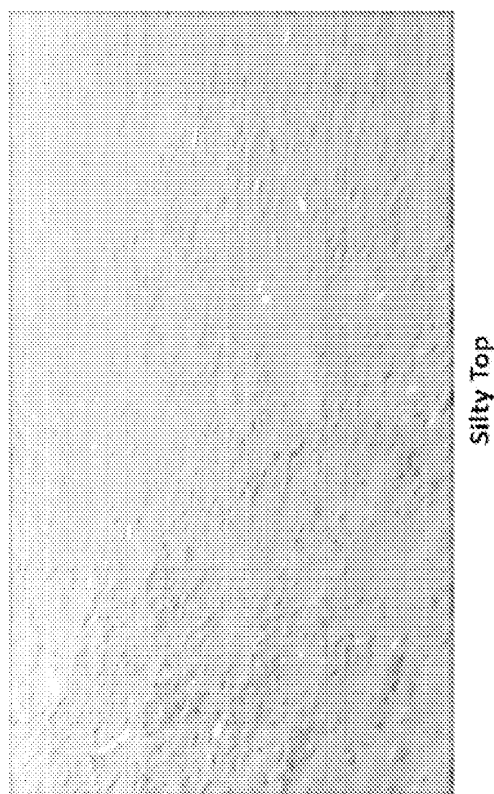
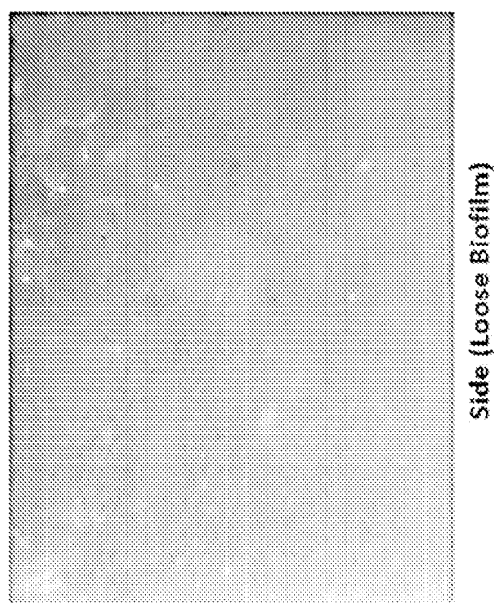
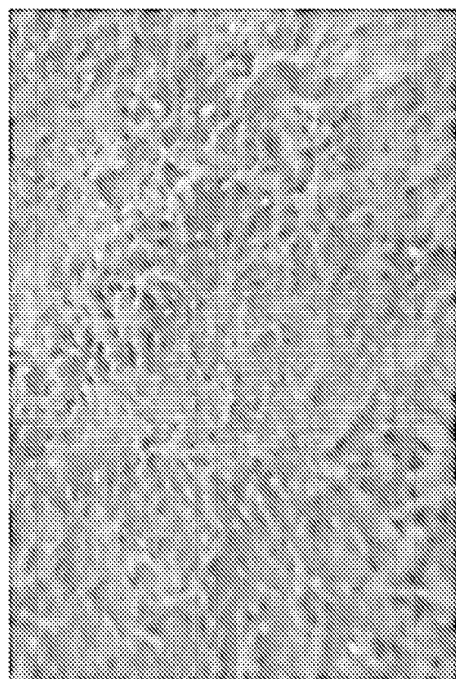
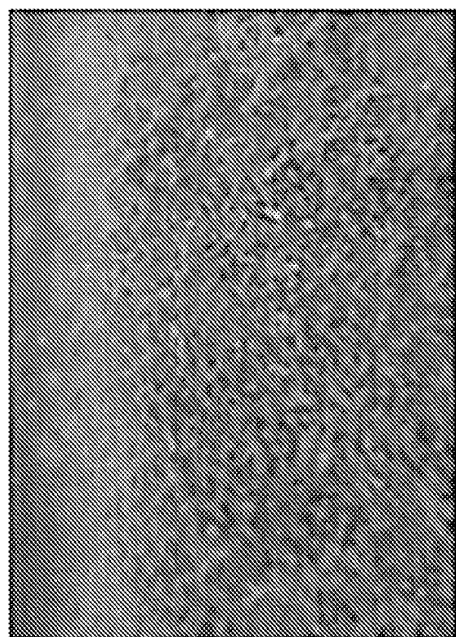


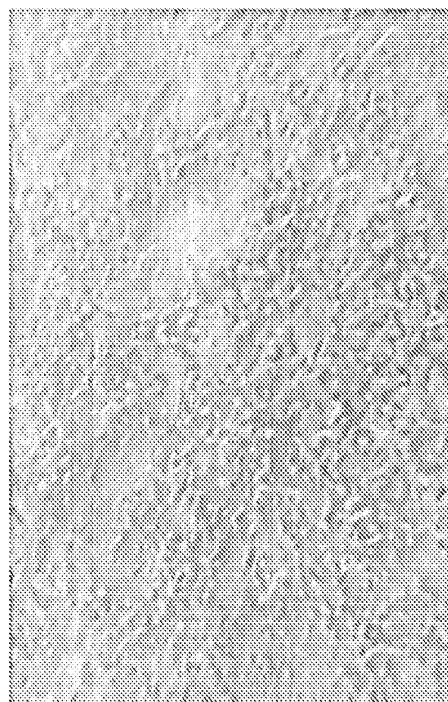
FIGURE 25C



Thick Silty Biofilm



Side (Silty Biofilm)



Thick Silty Biofilm

FIGURE 25D

Descriptor	Pump Rate	Pump Rate (gal/hr)	Raceway size	Raceway volume (gal)	# of water exchanges in raceway (per hr)	Fabric box (sq ft)	Box (gal)	Water exchange in box (per hr)	Water exchange in system (per hr)	Fabric permeation gal/sqft/min	Dwell time in raceway (min)	Dwell time full system (min)
4 Large	High	588	Large	190	3.1	42.0	138.0	4.3	1.8	0.2	19.4	33.5
2 Standard	Low	182	Small	40	4.6	8.9	9.2	19.8	3.7	0.3	13.2	16.2
3 Fast	High	641	Small	40	16.0	8.9	9.2	69.6	13.0	1.2	3.7	4.6
1 Control	Low	228	Small	40	5.7	0	0	0.0	5.7	0.0	0.0	0.0

FIGURE 26A

FIGURE 26B

Descriptor	Pump Rate	Pump Rate (gal/hr)	Raceway size	Raceway volume (gal)	# of water exchanges in raceway (per hr)	Box (sq ft)	Box Vol (gal)	Biocide (LB/sqft)	Total Biocide (lbs)	Total Water per 30 days (gal)	Total Water per 60 days (gal)	Total Biocide in Water per 30 days (lbs/gal)	Total Biocide in Water per 60 days (lbs/gal)	Total Biocide in water per 60days (ppm)
4 Large	High	588	Large	190	3.1	42.0	138.0	0.0050	0.2100	423360	846720	4.960E-07	2.48016E-07	0.030
2 Standard	Low	182	Small	40	4.6	8.9	9.2	0.0050	0.0445	131040	262080	3.356E-07	1.69795E-07	0.020
3 Fast Pump	High	641	Small	40	16.0	8.9	9.2	0.0050	0.0445	461520	923040	9.642E-08	4.82103E-08	0.006
1 Control	Low	228	Small	40	5.7	0	0	0.0000	0.0000	0.0	0.0	0	0	0
Based on biocide (160A paint with 6.81 LBs Ecocona/100 LBs paint, 0.005 lbs coating weight/sq-ft)														

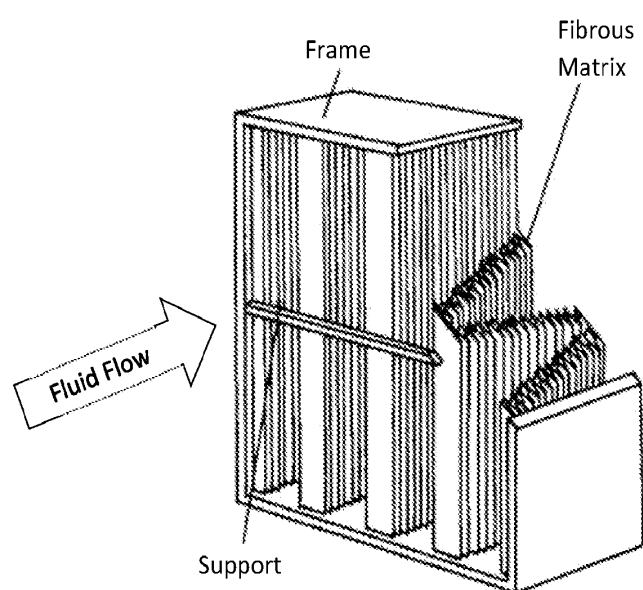


FIGURE 27

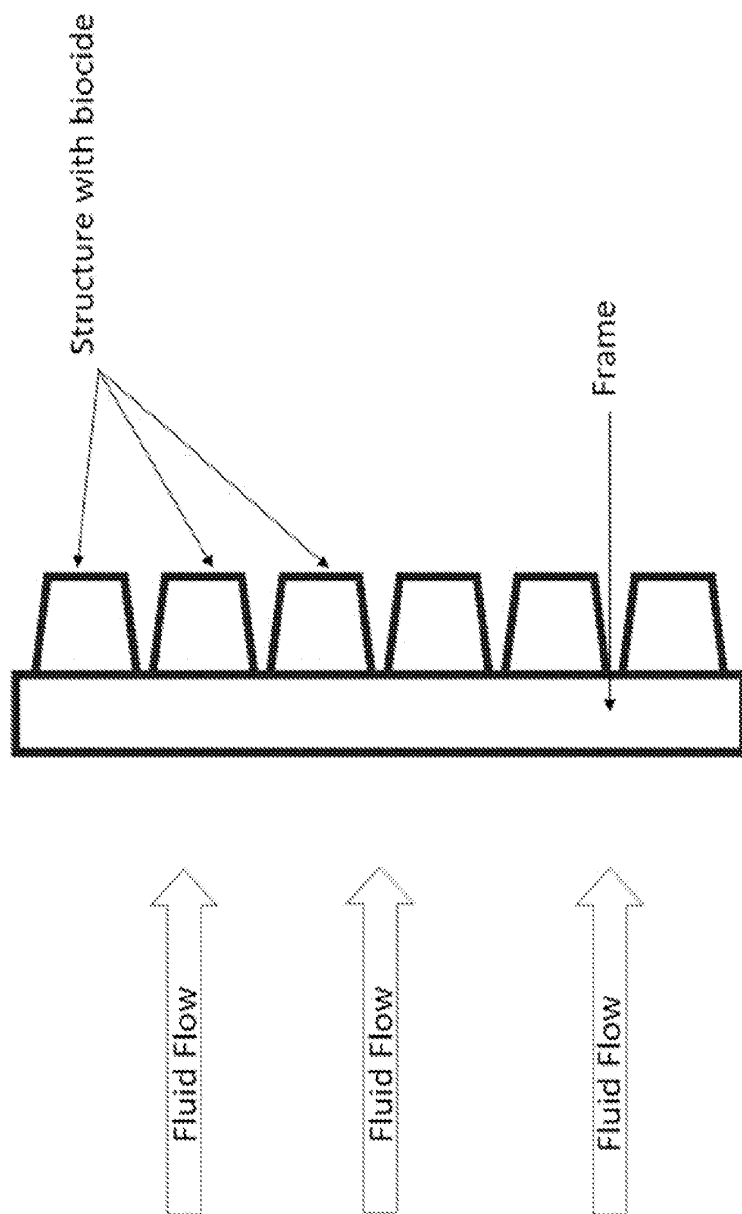


FIGURE 28

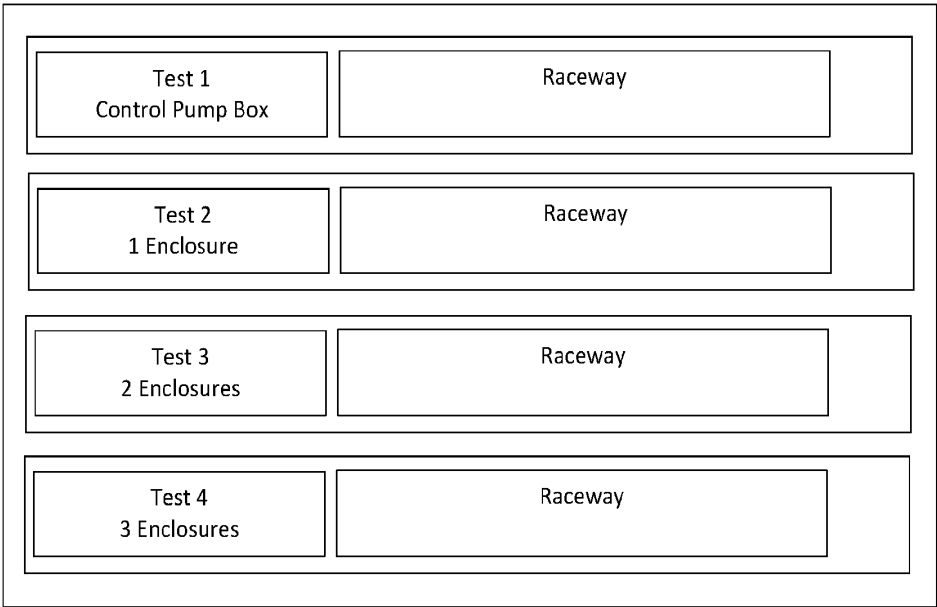


FIGURE 29

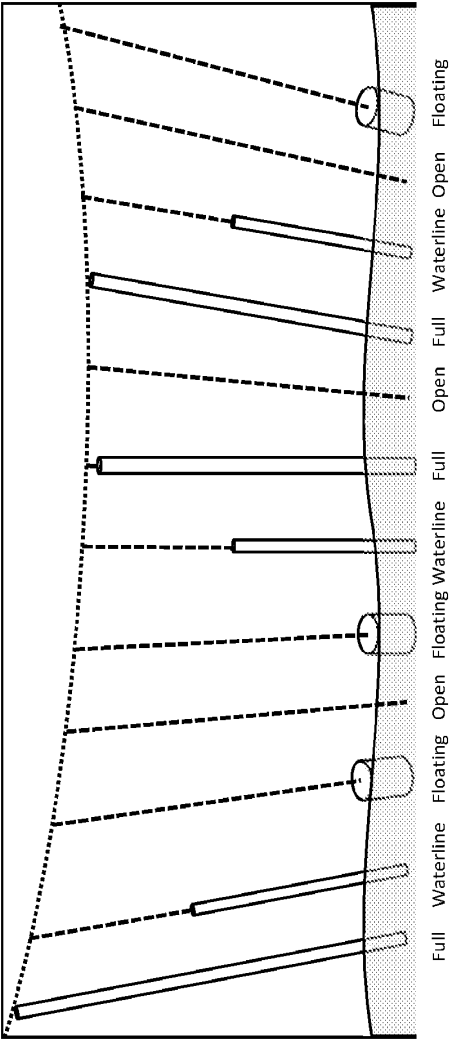


FIGURE 30