Co-Ex: Cross Section View

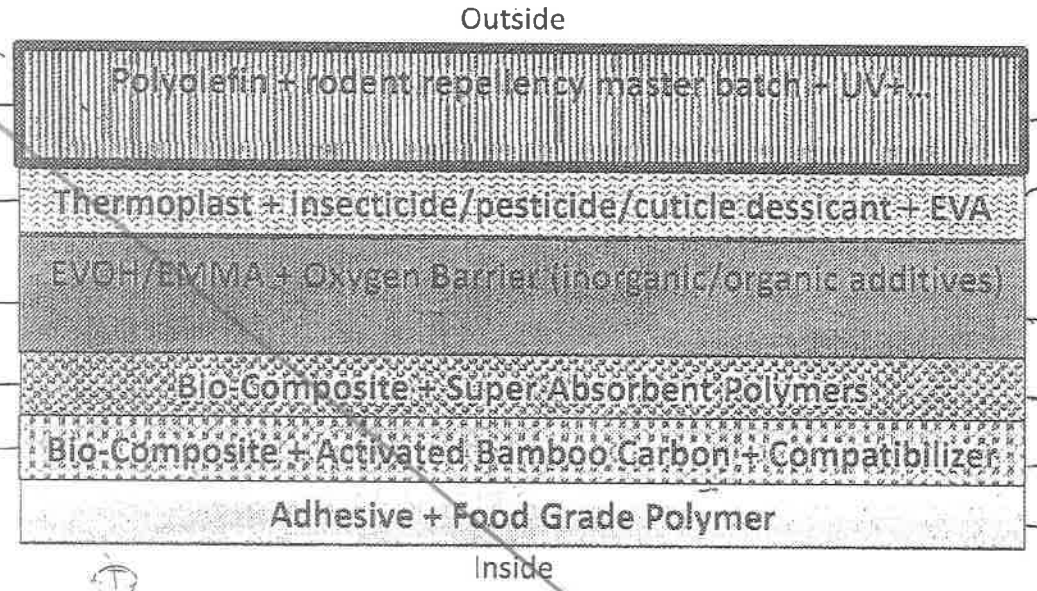


FIG. 1

Multi-Layer Co-extrusion substrate (substrate not limited to illustrated number or structure of layers) see listed description

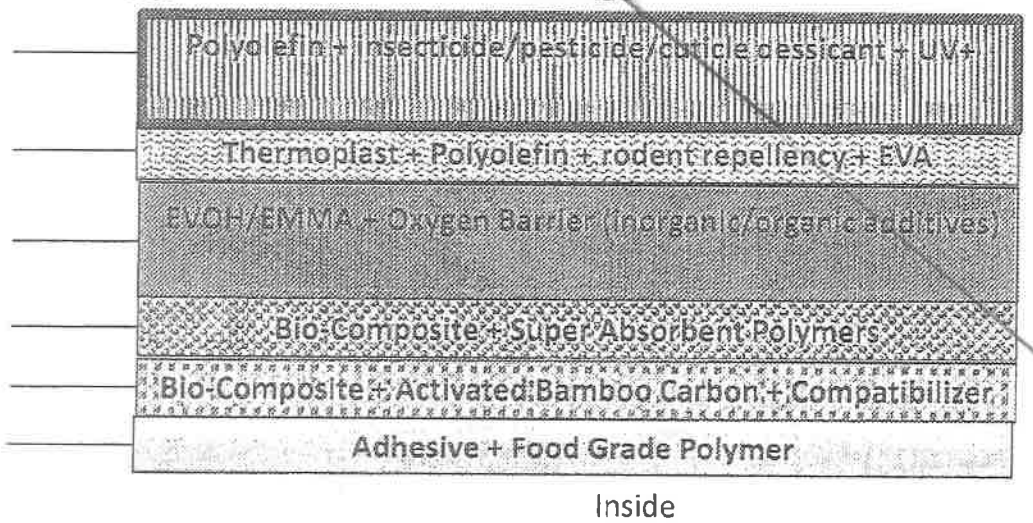


FIG. 1a

Active Ingredient + plasticizer Interchangeability Of raw materials and function on Outer Layers

Co-Ex

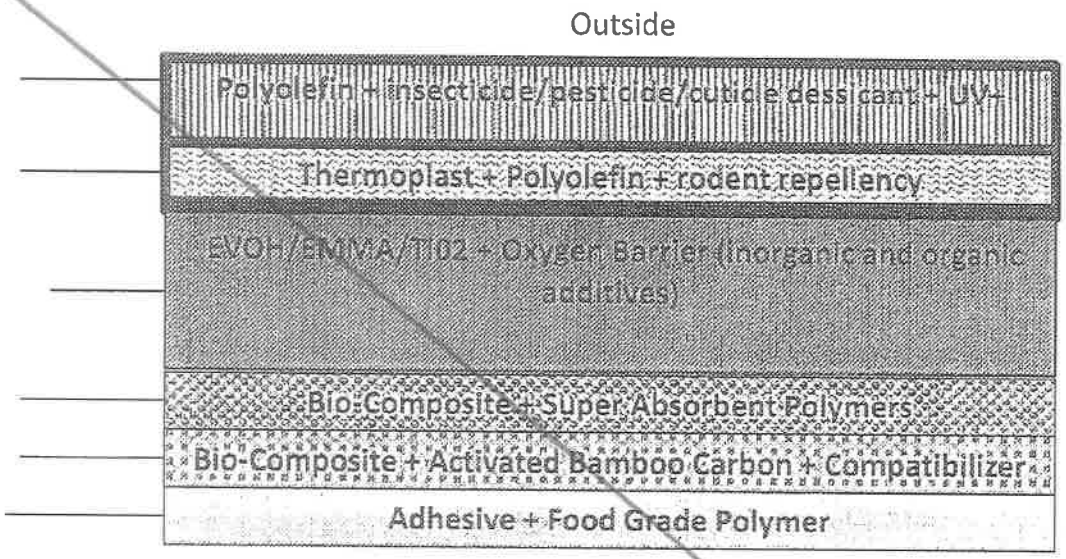


FIG. 1b

Active Ingredients Combined in Outer Layer

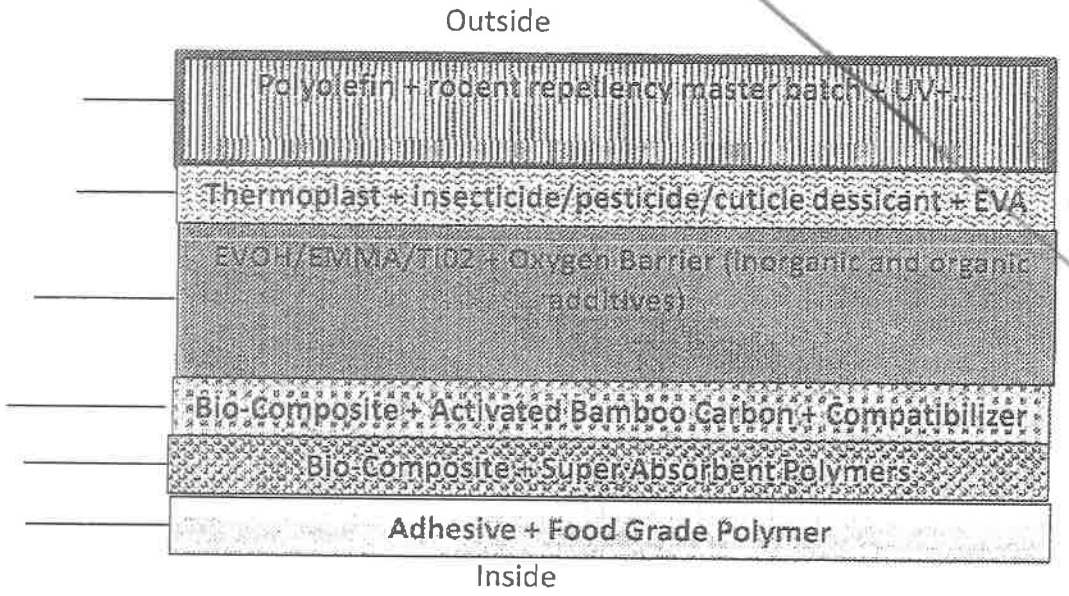


FIG. 1C

-Outer Layer: any combination from FIG 1, FIG, 1a, FIG. 1b or any other combination of polyolefins, inclusive of, but not limited to, copolymers, bio-composites, thermoplasts etc. and active ingredient s for repellency of various insect pests and rodents

-Bio-Composite absorbency layers are interchangeable

Co-Ex

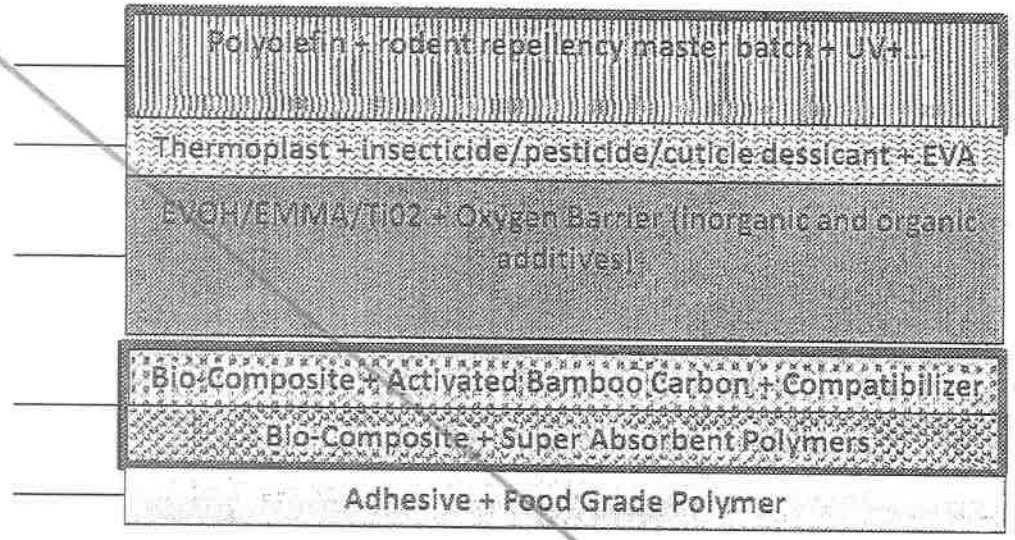


FIG. 1d

-Outer Layers can be any of the previous embodiments
-Bio-Composite Layers combine both Super Absorbent Polymers and Activated Bamboo Carbon

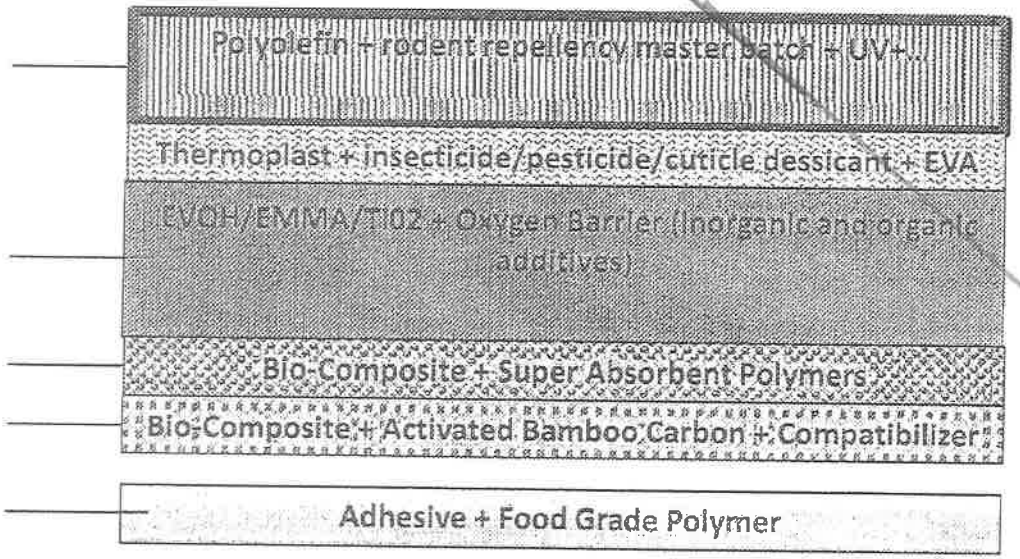


FIG. 1e

-Outer Layers and Bio-Composite Layers can be either of, but not limited to, the previous embodiments
-Adhesive Food Grade Layer blown separately, liner insert

Weaving, Lamination, Thermal point bonding

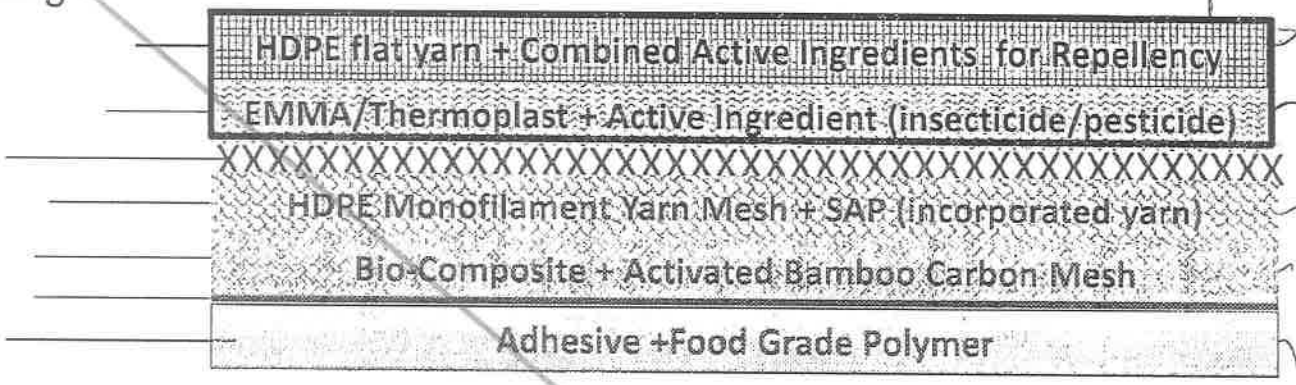


FIG. 2

-Woven flat yarn, active ingredients differ from warp-weft, with Inside lamination -Outer Layers joined to Bio-Mesh Substrates by thermal point bonding

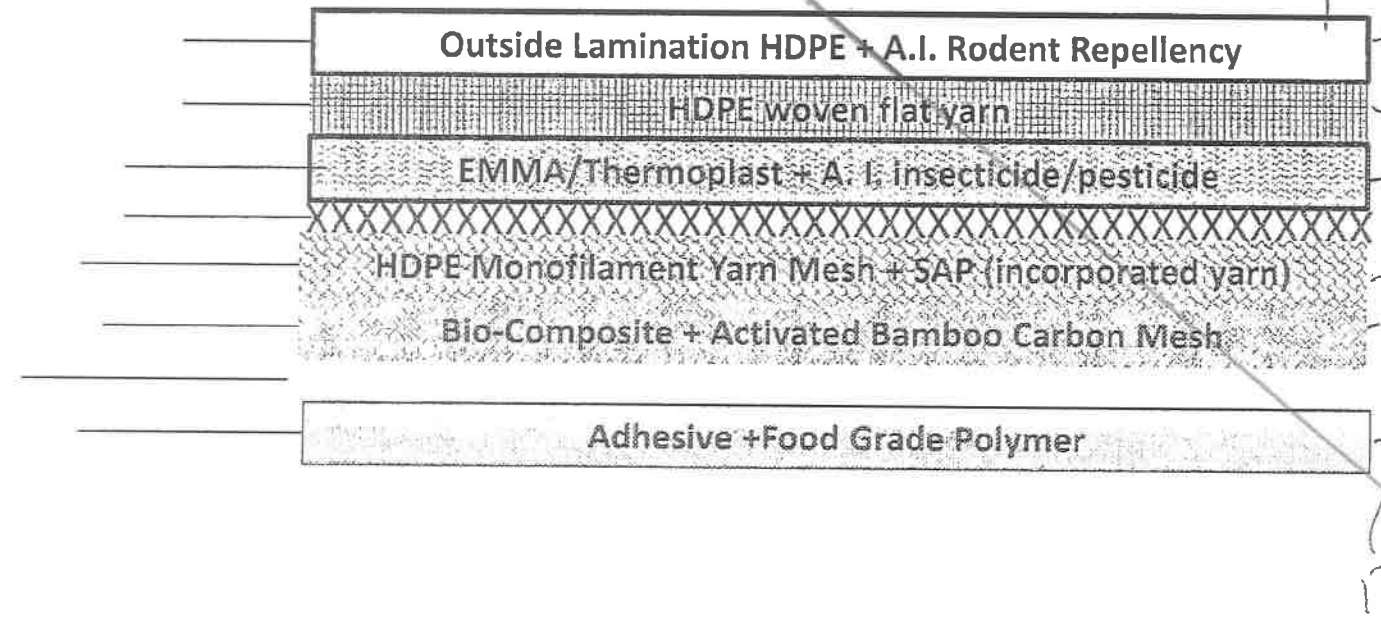


FIG. 2a

-Outer Layer= Lamination, rodent repellent, Woven flat yarn double lamination Inner Layer= insecticide -Thermal point bonding to attach to mesh substrates -Food Grade Polymer attached later as insert liner

WO 2011/072992 PCT/US2013/069446

Weaving, Lamination, Thermal point bonding

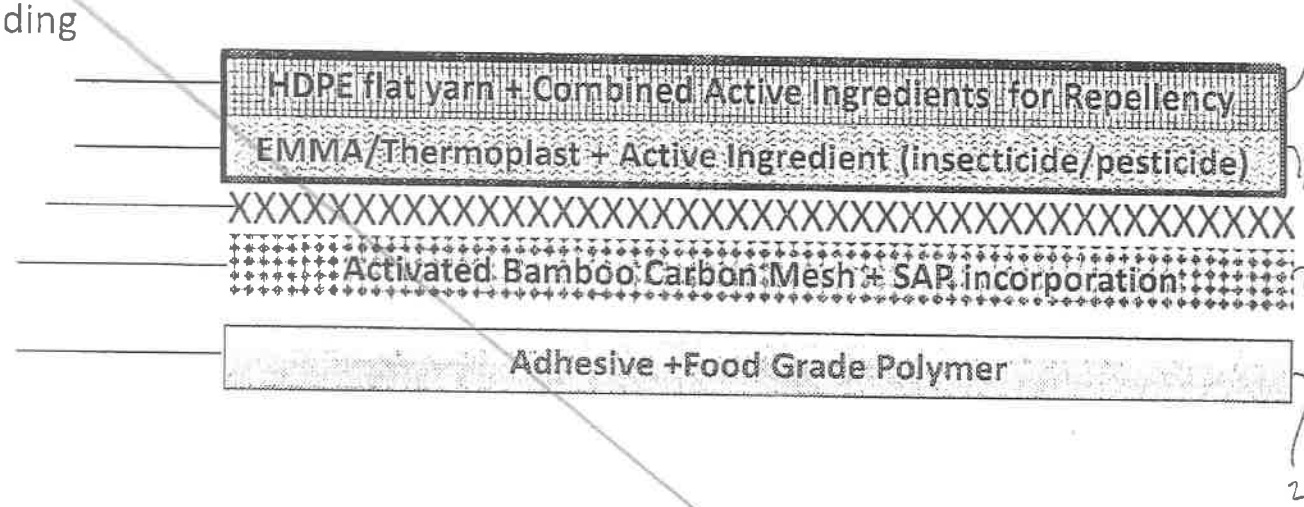


FIG. 2b

-Outer Layers are woven+ inner laminated
-Thermal point bonding
-Activated Carbon Mesh incorporated/coated with SAP

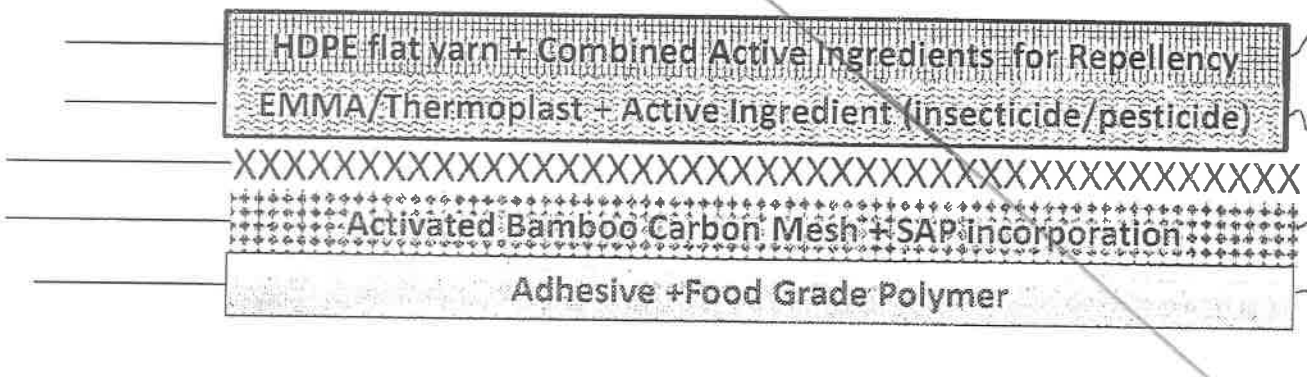


FIG. 2c

-Outer Layers woven + inner lamination
-Thermal point bonding
-Carbon mesh incorporated with SAP

WO 2014/074992 PCT/US2013/069446

Further Embodiments

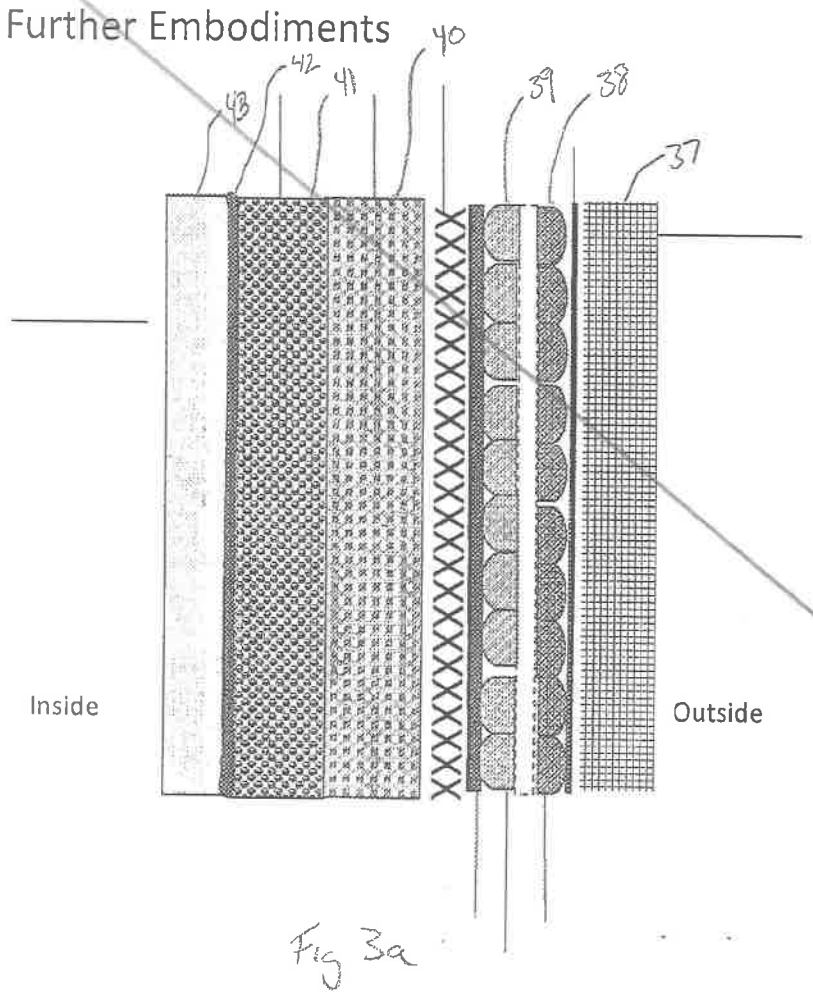


Fig 3a

Extended Release Mechanism Through Membrane Vertical View

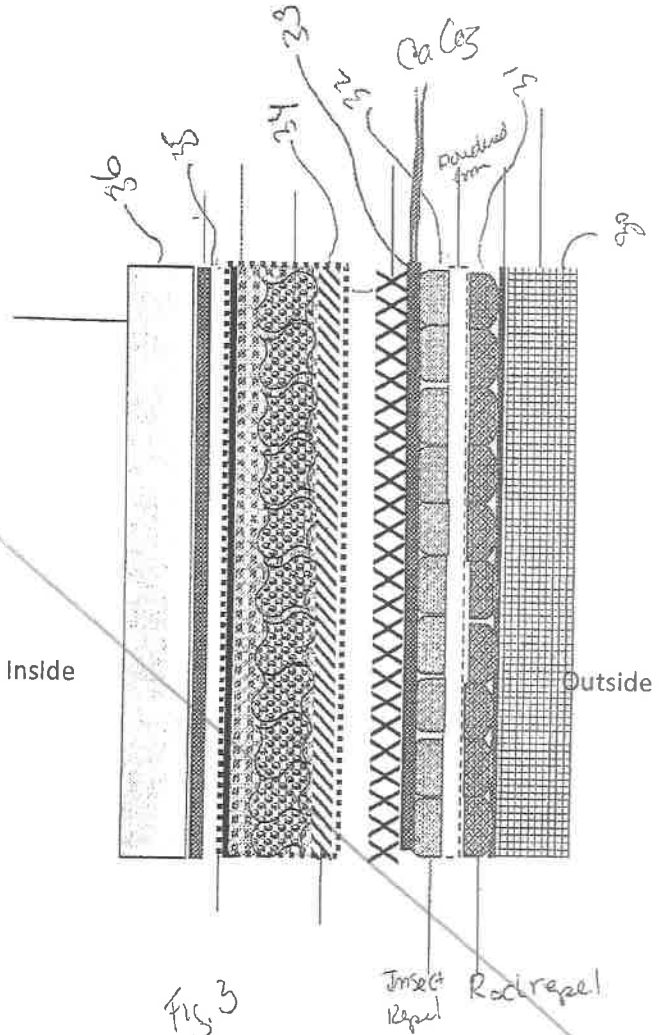


Fig 3

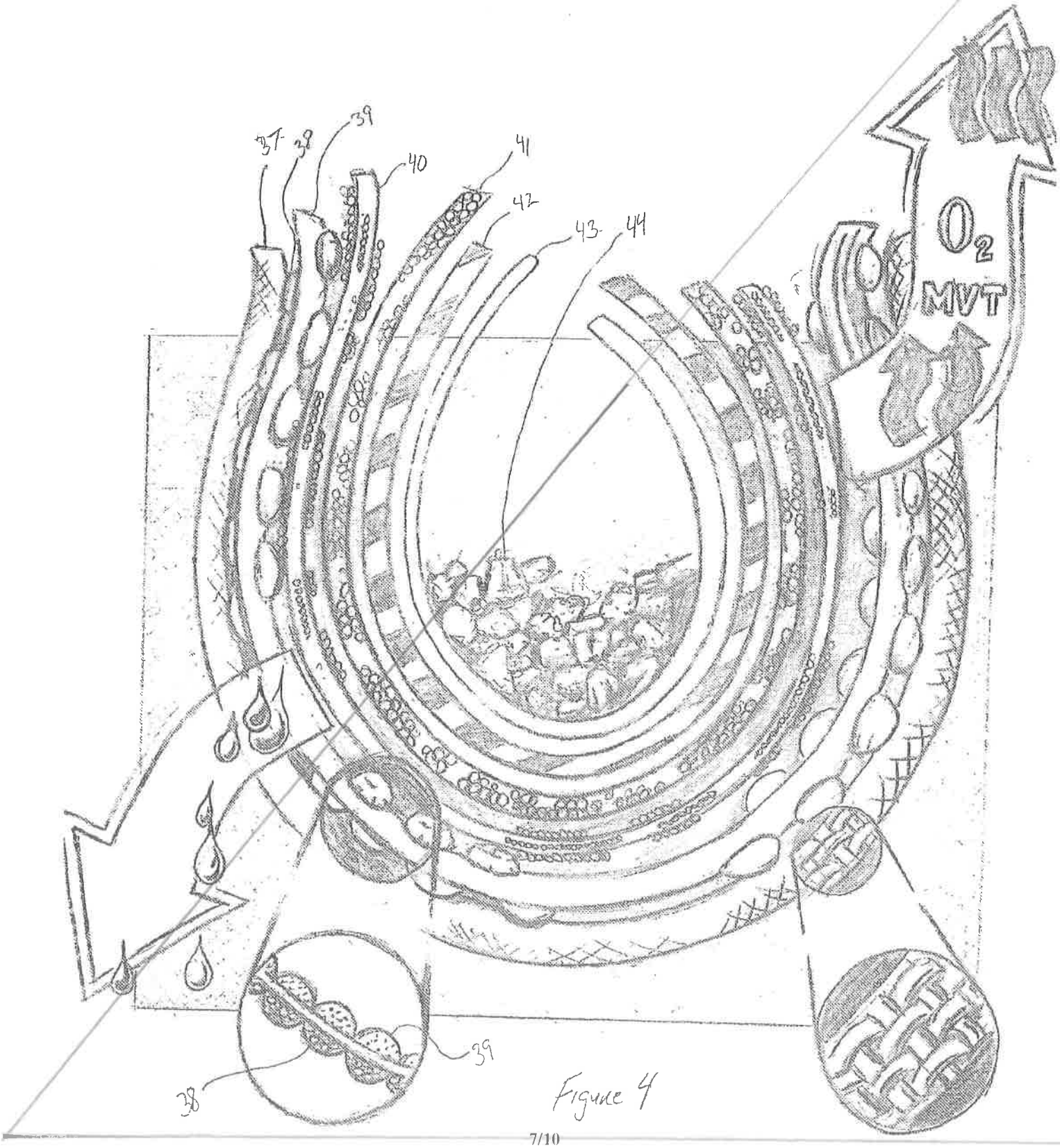


Figure 4

Figure 5

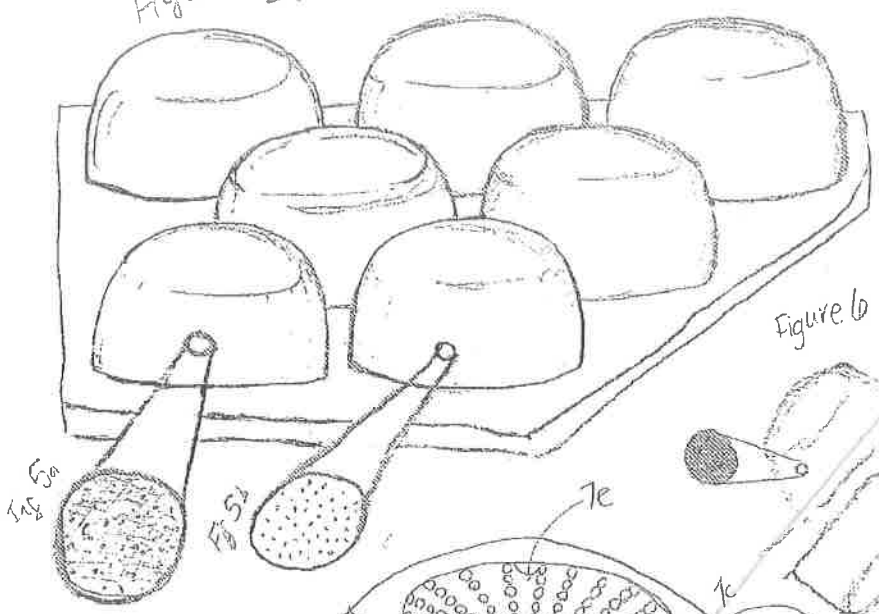


Figure 6b

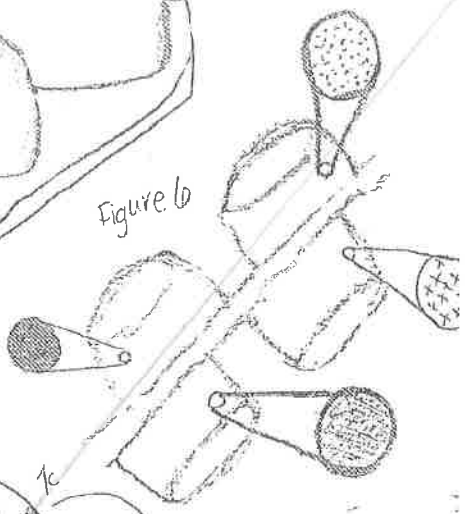


Fig 7

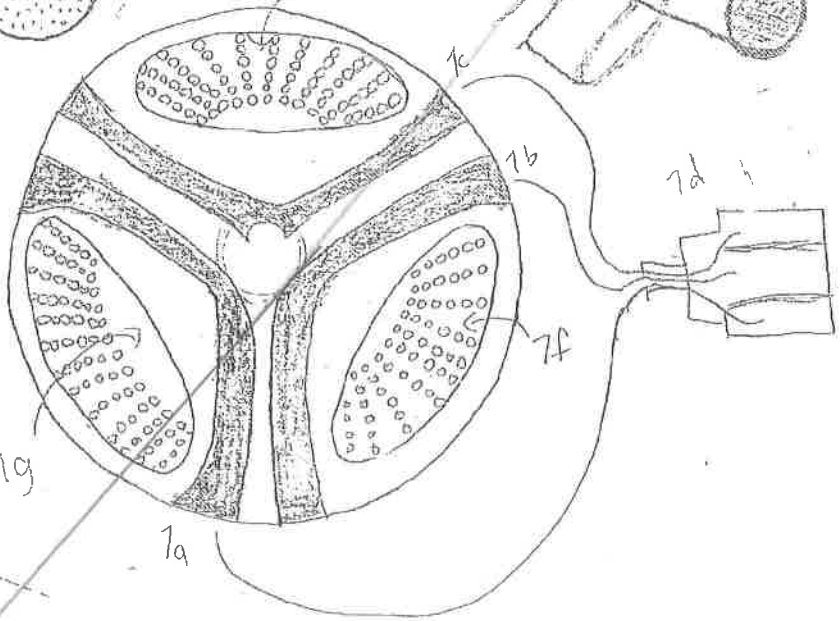
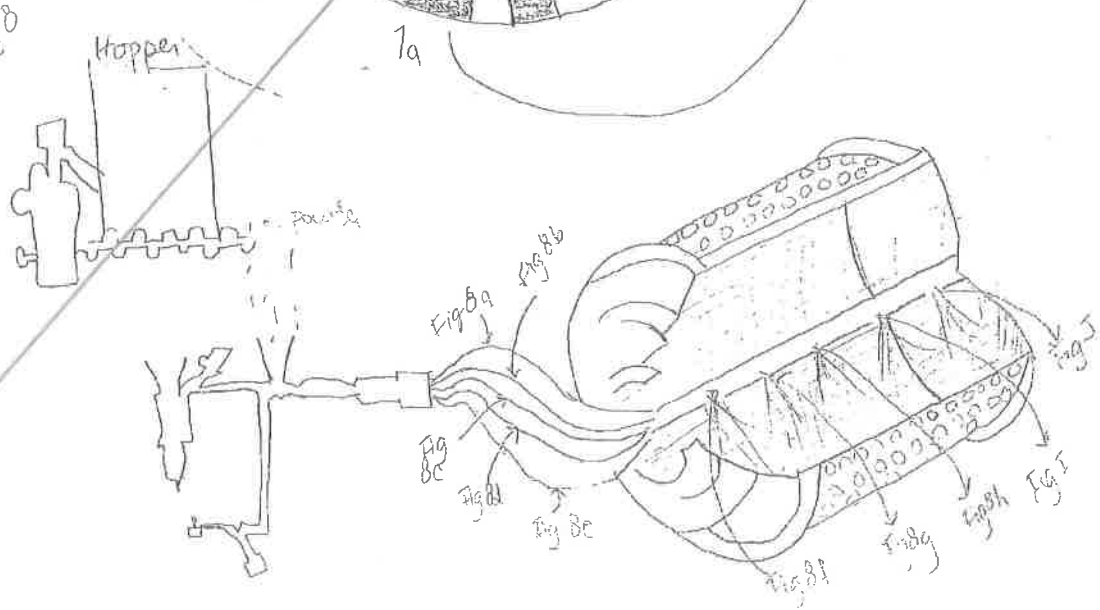
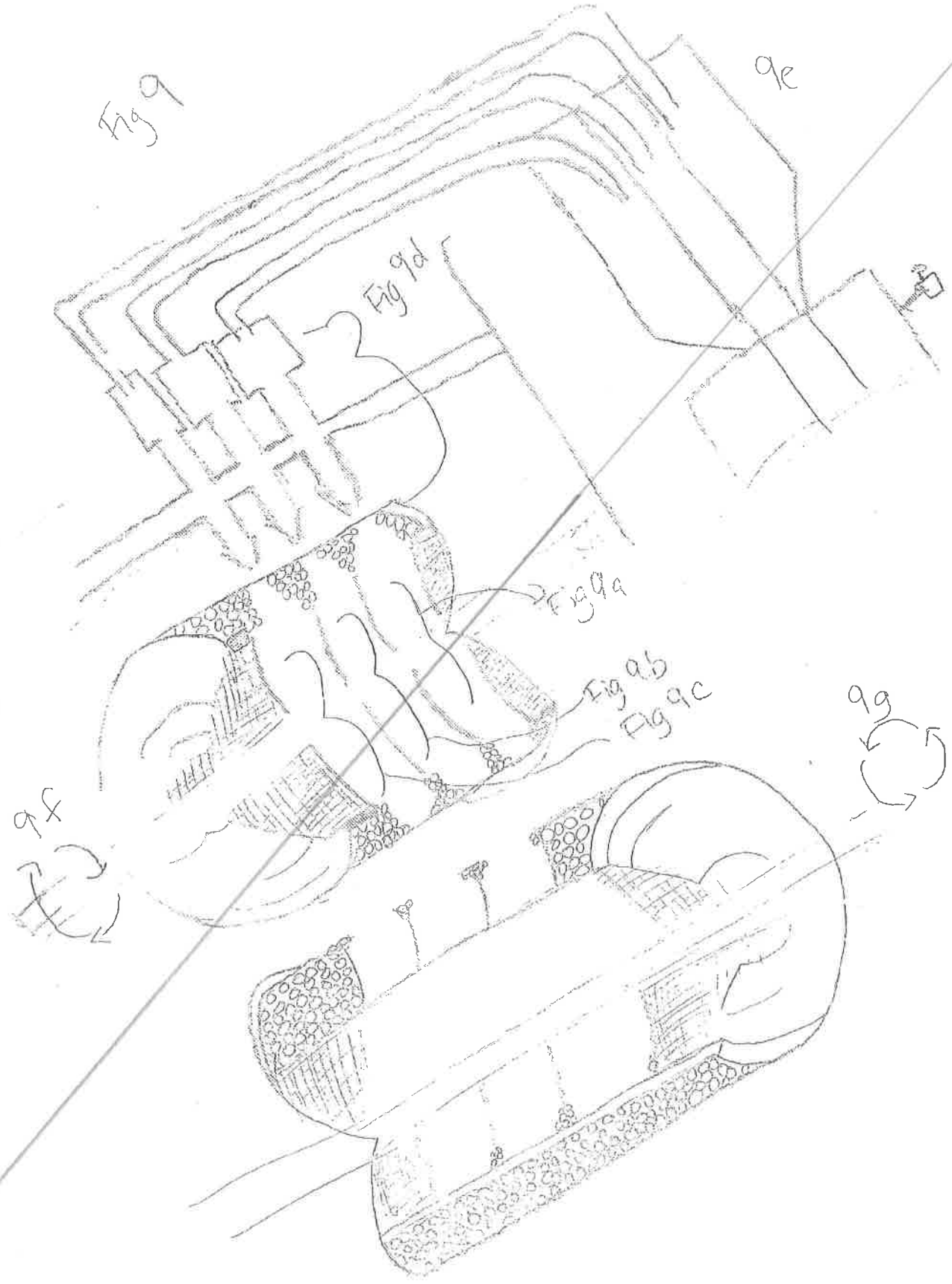
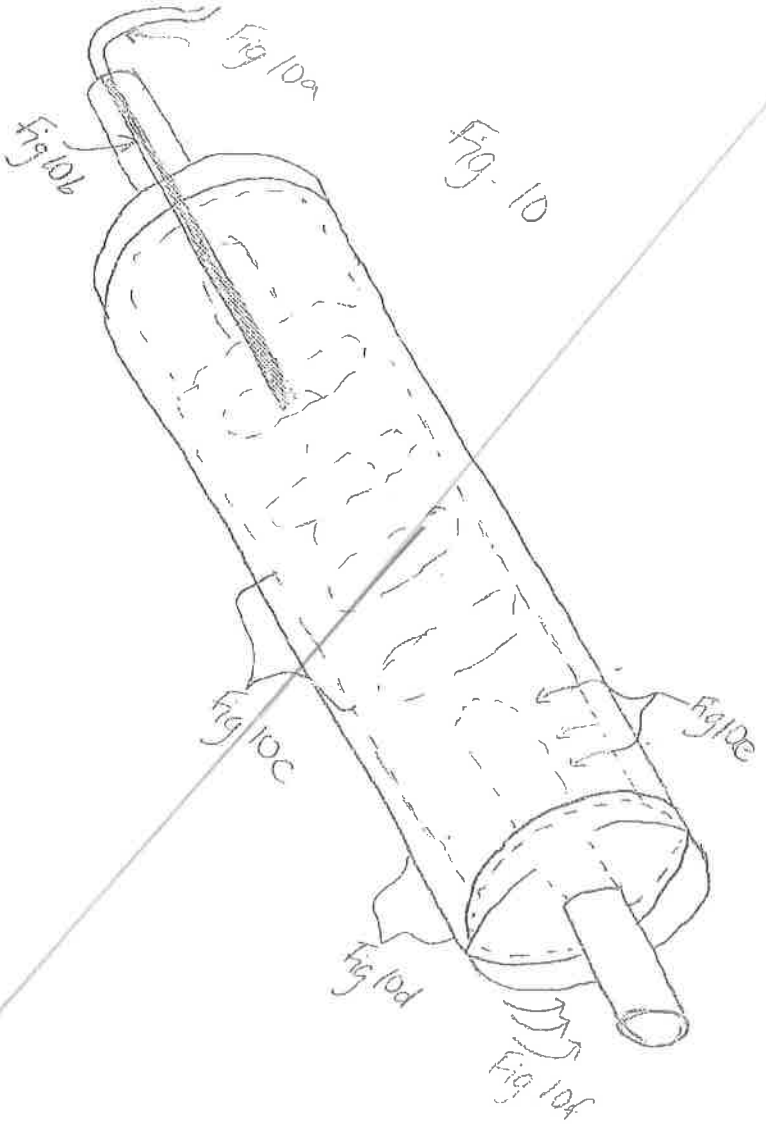


Fig 8




Fig 9
9e
Fig 9d
Fig 9a
Fig 9b
Fig 9c
9g
9f


Fig 10a
Fig 10b
Fig. 10
Fig 10c
Fig 10e
Fig 10d
Fig 10f

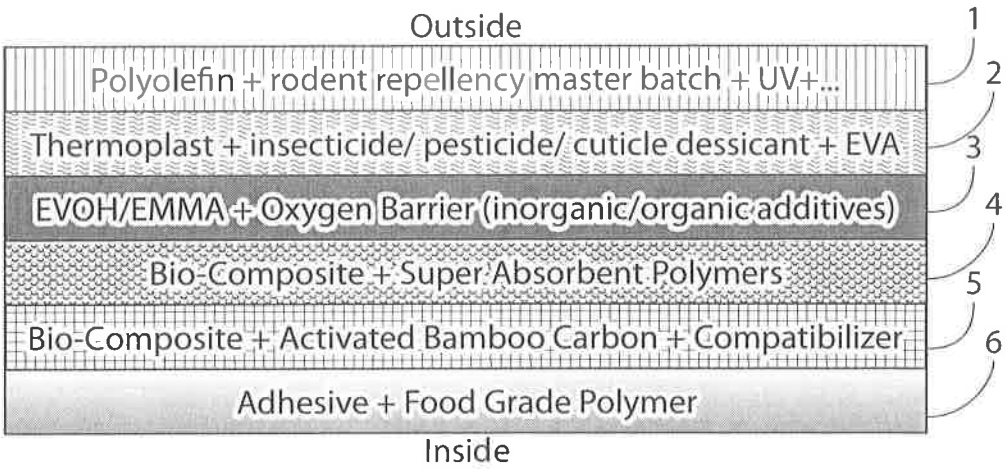

Outside
Polyolefin + rodent repellency master batch + UV+...
Thermoplast + insecticide/ pesticide/ cuticle dessicant + EVA
EVOH/EMMA + Oxygen Barrier (inorganic/organic additives)
Bio-Composite + Super Absorbent Polymers
Bio-Composite + Activated Bamboo Carbon + Compatibilizer
Adhesive + Food Grade Polymer
Inside
1
2
3
4
5
6

FIG. 1

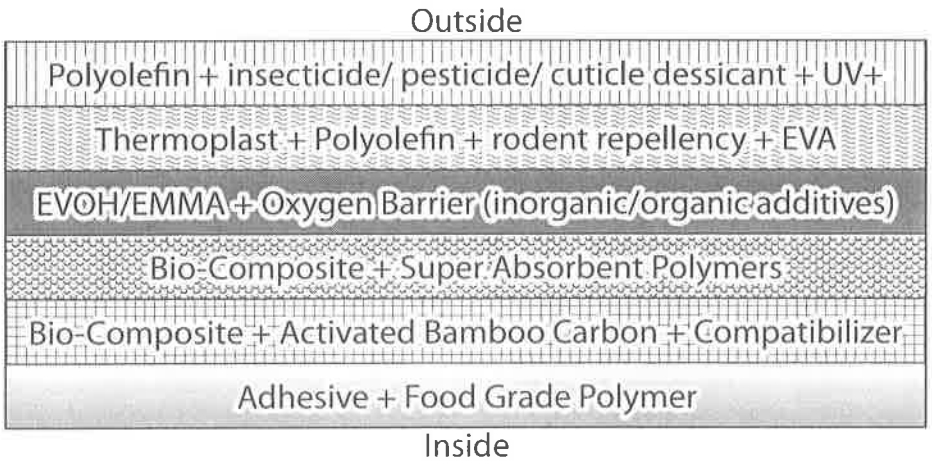

Outside
Polyolefin + insecticide/ pesticide/ cuticle dessicant + UV+
Thermoplast + Polyolefin + rodent repellency + EVA
EVOH/EMMA + Oxygen Barrier (inorganic/organic additives)
Bio-Composite + Super Absorbent Polymers
Bio-Composite + Activated Bamboo Carbon + Compatibilizer
Adhesive + Food Grade Polymer
Inside

FIG. 1a

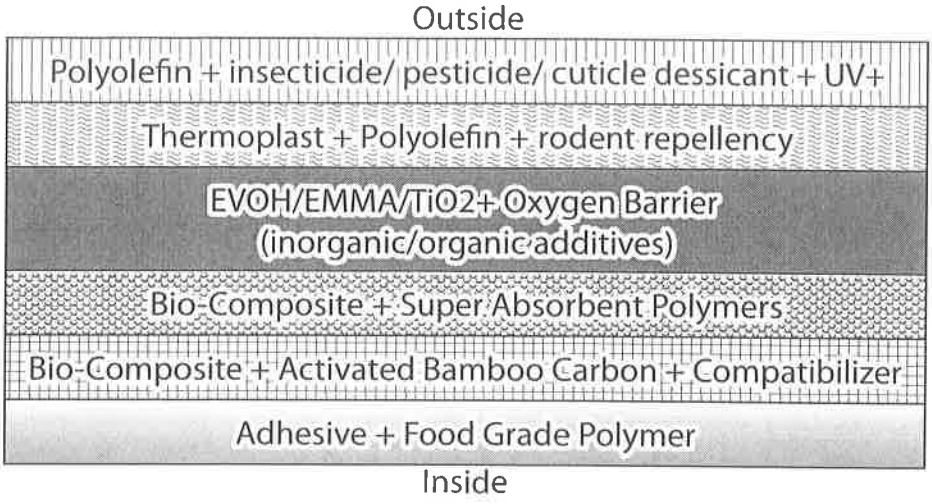

Outside
Polyolefin + insecticide/ pesticide/ cuticle dessicant + UV+
Thermoplast + Polyolefin + rodent repellency
EVOH/EMMA/TiO2+ Oxygen Barrier
(inorganic/organic additives)
Bio-Composite + Super Absorbent Polymers
Bio-Composite + Activated Bamboo Carbon + Compatibilizer
Adhesive + Food Grade Polymer
Inside

FIG. 1b

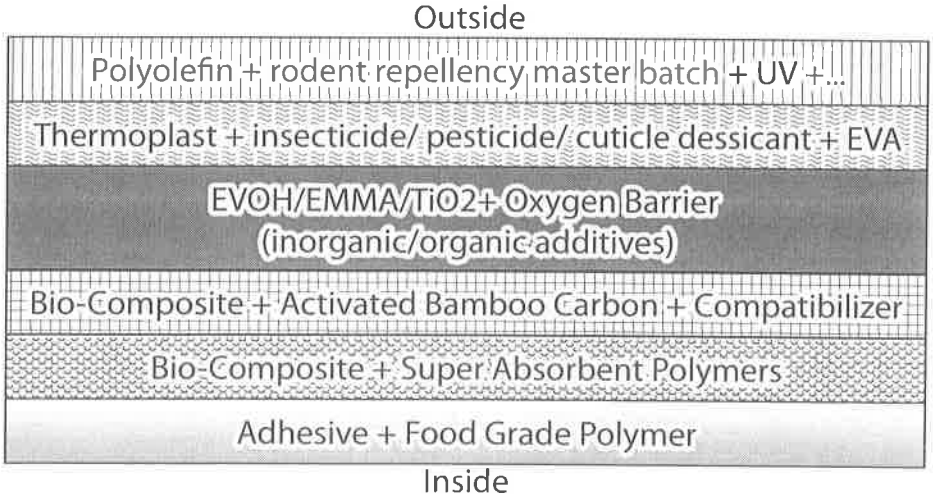

Outside
Polyolefin + rodent repellency master batch + UV +...
Thermoplast + insecticide/ pesticide/ cuticle dessicant + EVA
EVOH/EMMA/TiO2+ Oxygen Barrier
(inorganic/organic additives)
Bio-Composite + Activated Bamboo Carbon + Compatibilizer
Bio-Composite + Super Absorbent Polymers
Adhesive + Food Grade Polymer
Inside

FIG. 1c

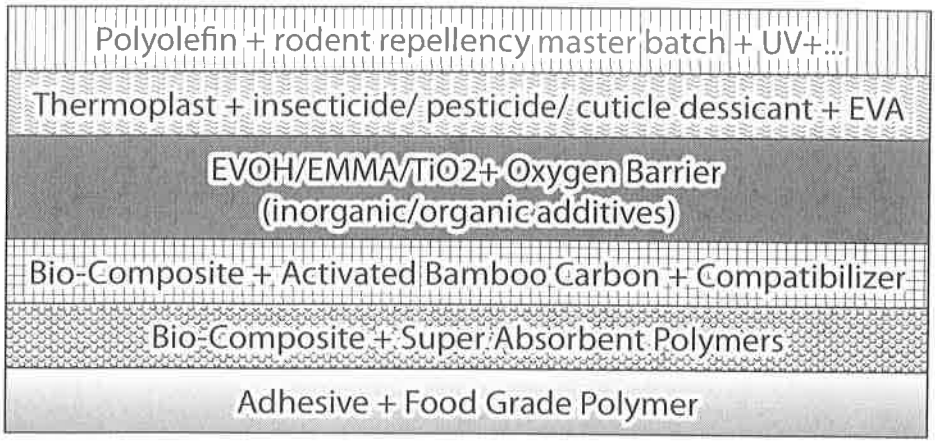

Polyolefin + rodent repellency master batch + UV+...
Thermoplast + insecticide/ pesticide/ cuticle dessicant + EVA
EVOH/EMMA/TiO2+ Oxygen Barrier
(inorganic/organic additives)
Bio-Composite + Activated Bamboo Carbon + Compatibilizer
Bio-Composite + Super Absorbent Polymers
Adhesive + Food Grade Polymer

FIG. 1d

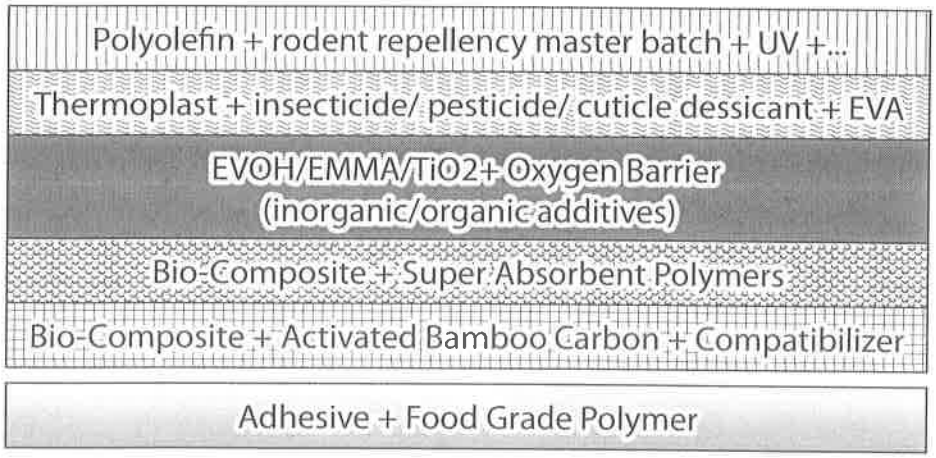

Polyolefin + rodent repellency master batch + UV +...
Thermoplast + insecticide/ pesticide/ cuticle dessicant + EVA
EVOH/EMMA/TiO2+ Oxygen Barrier
(inorganic/organic additives)
Bio-Composite + Super Absorbent Polymers
Bio-Composite + Activated Bamboo Carbon + Compatibilizer
Adhesive + Food Grade Polymer

FIG. 1e

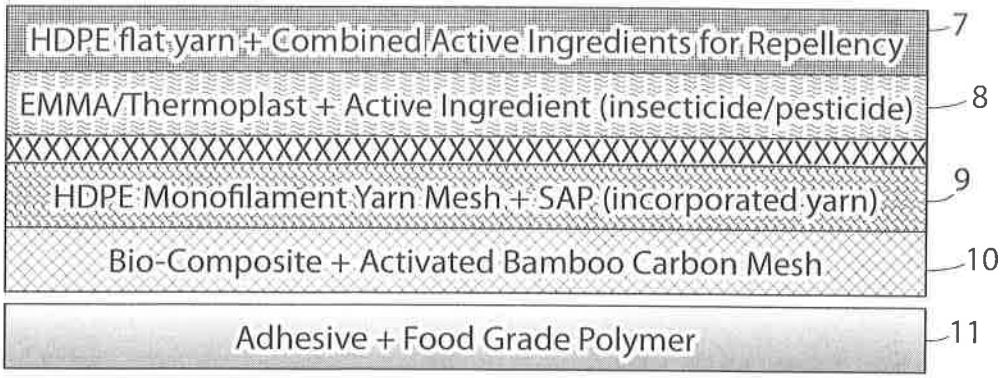

HDPE flat yarn + Combined Active Ingredients for Repellency
7
EMMA/Thermoplast + Active Ingredient (insecticide/pesticide)
8
HDPE Monofilament Yarn Mesh + SAP (incorporated yarn)
9
Bio-Composite + Activated Bamboo Carbon Mesh
10
Adhesive + Food Grade Polymer
11

FIG. 2

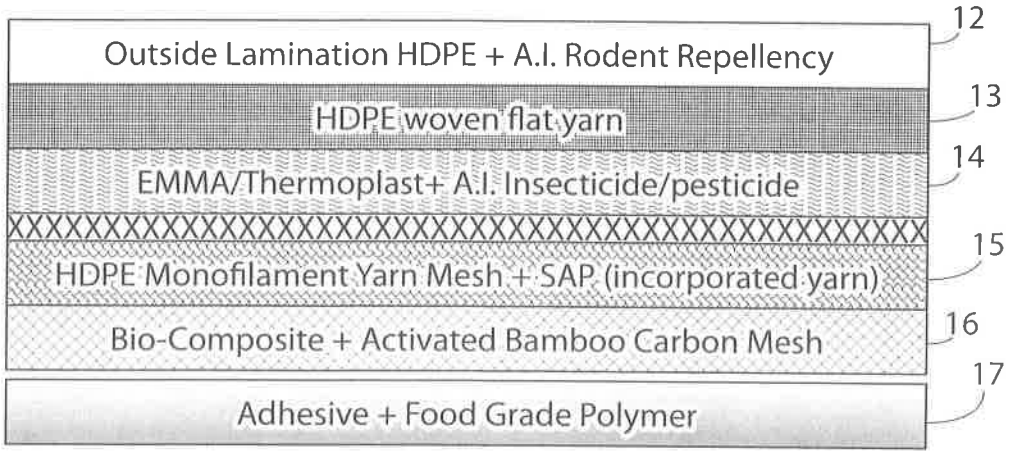

Outside Lamination HDPE + A.I. Rodent Repellency
12
HDPE woven flat yarn
13
EMMA/Thermoplast+ A.I. Insecticide/pesticide
14
HDPE Monofilament Yarn Mesh + SAP (incorporated yarn)
15
Bio-Composite + Activated Bamboo Carbon Mesh
16
Adhesive + Food Grade Polymer
17

FIG. 2a

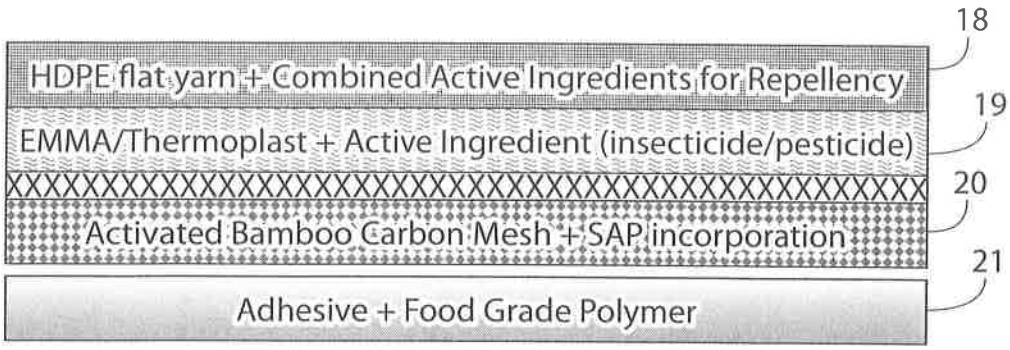

18
HDPE flat yarn + Combined Active Ingredients for Repellency
19
EMMA/Thermoplast + Active Ingredient (insecticide/pesticide)
20
Activated Bamboo Carbon Mesh + SAP incorporation
21
Adhesive + Food Grade Polymer

FIG. 2b

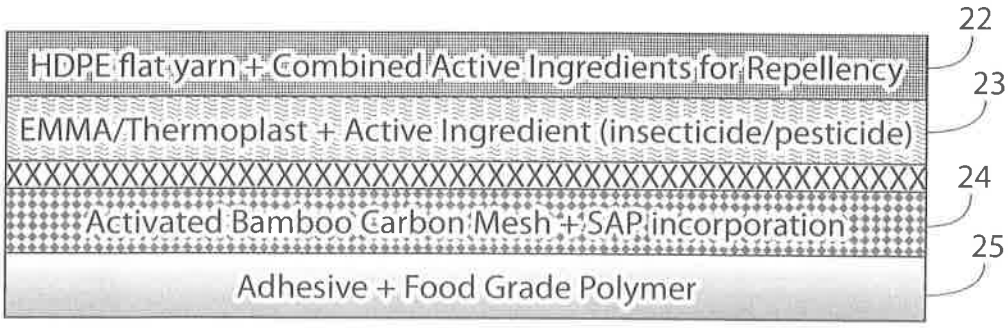

22
HDPE flat yarn + Combined Active Ingredients for Repellency
23
EMMA/Thermoplast + Active Ingredient (insecticide/pesticide)
24
Activated Bamboo Carbon Mesh + SAP incorporation
25
Adhesive + Food Grade Polymer

FIG. 2c

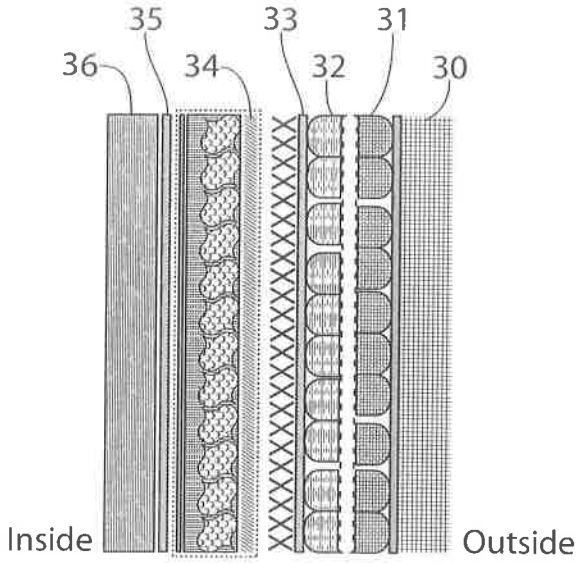

35
33
31
36
34
32
30
Inside
Outside

FIG. 3

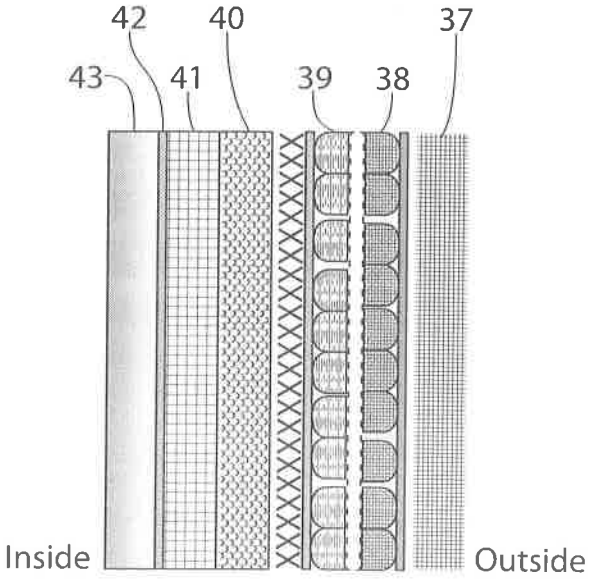

42
40
37
43
41
39
38
Inside
Outside

FIG. 3a

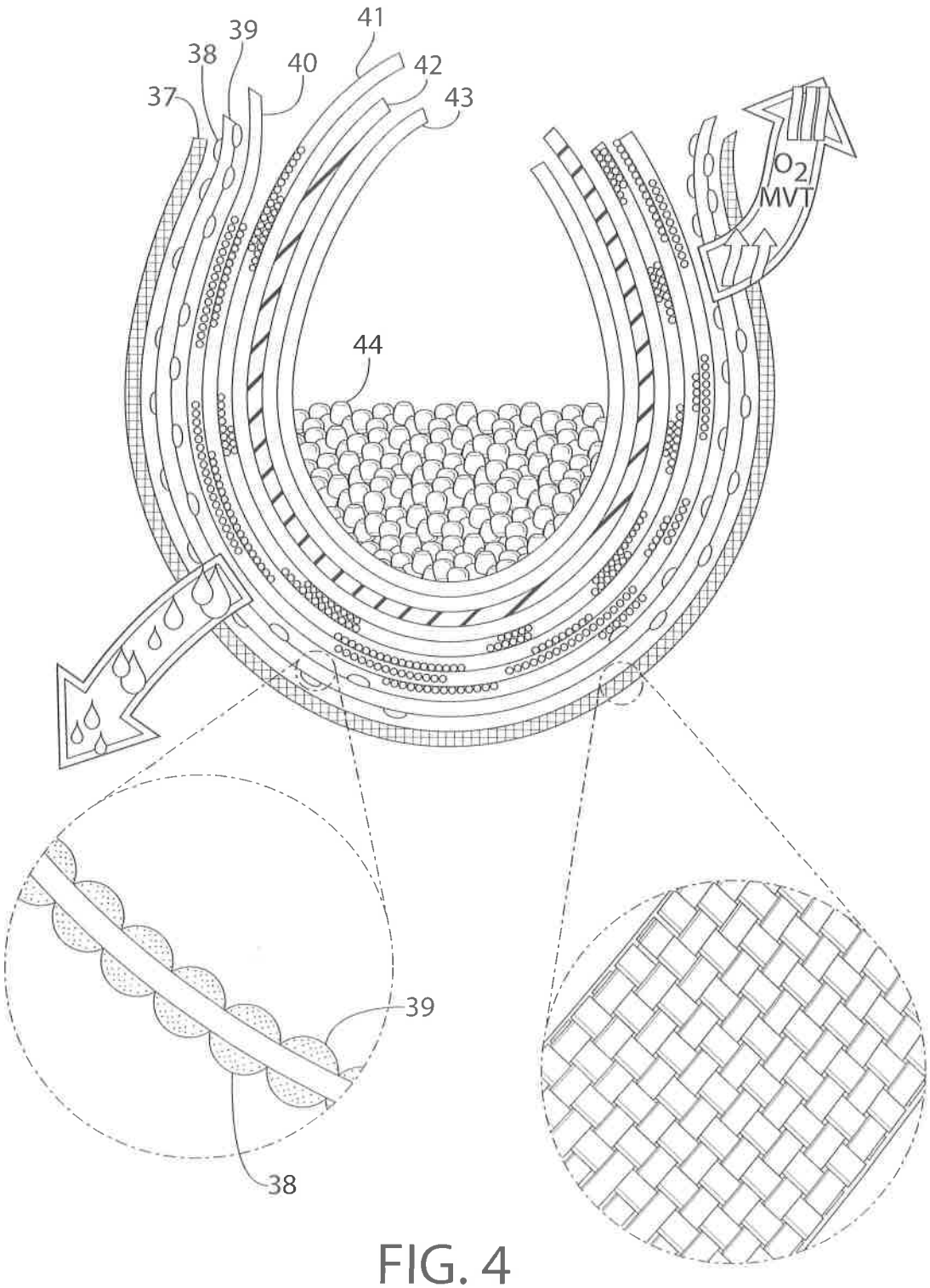


FIG. 4

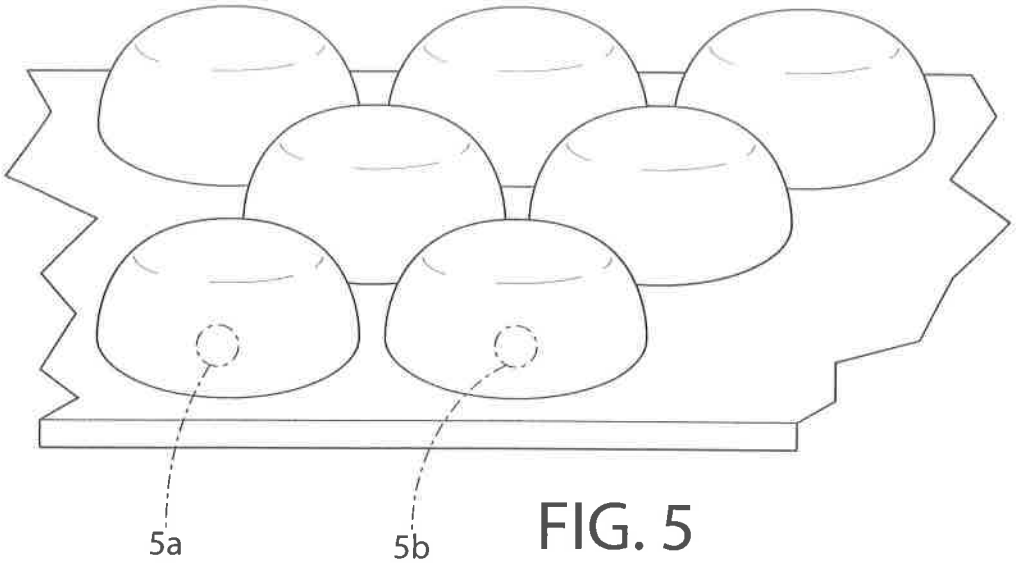


FIG. 5

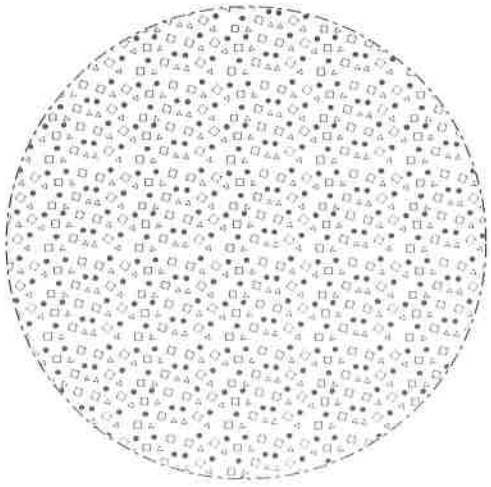


FIG. 5a

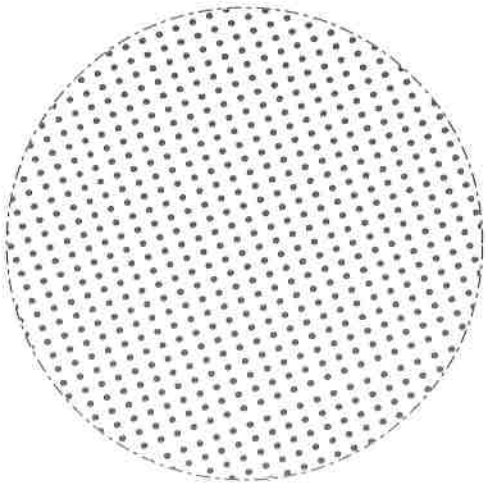


FIG. 5b

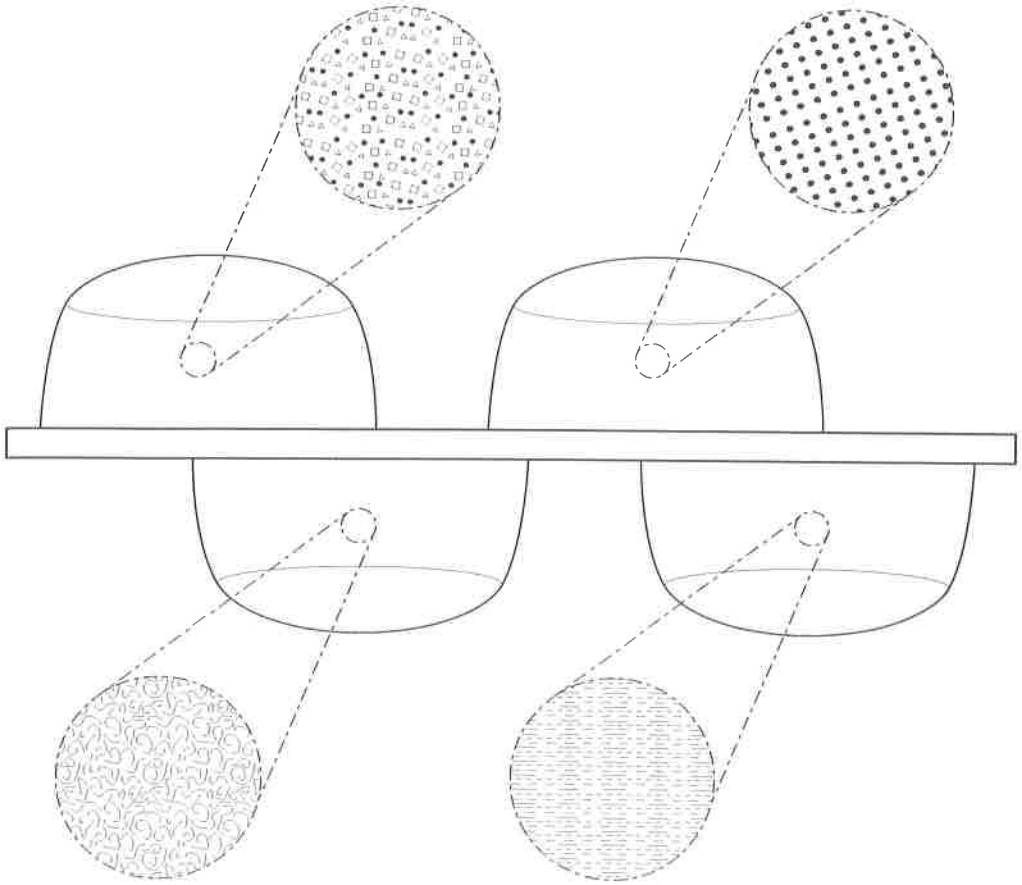


FIG. 6

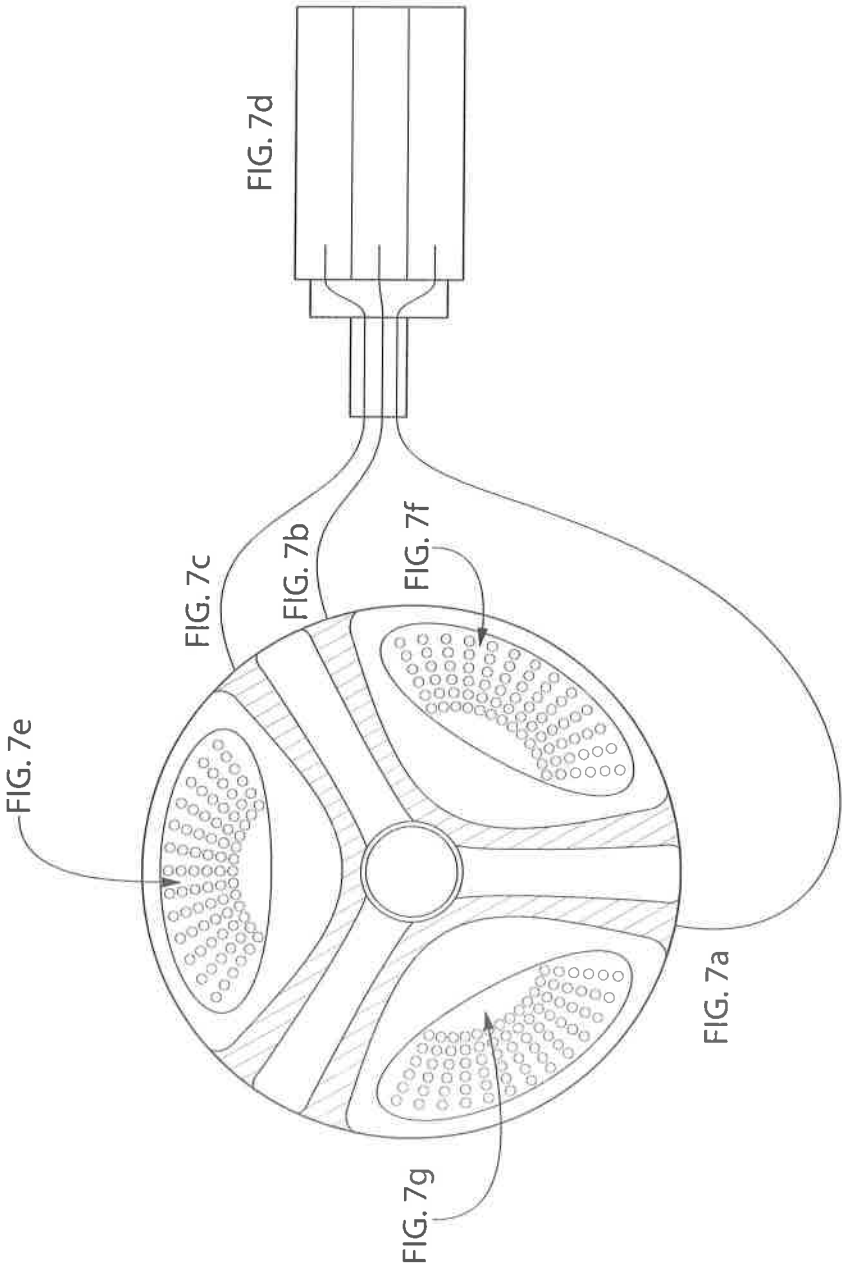


FIG. 7

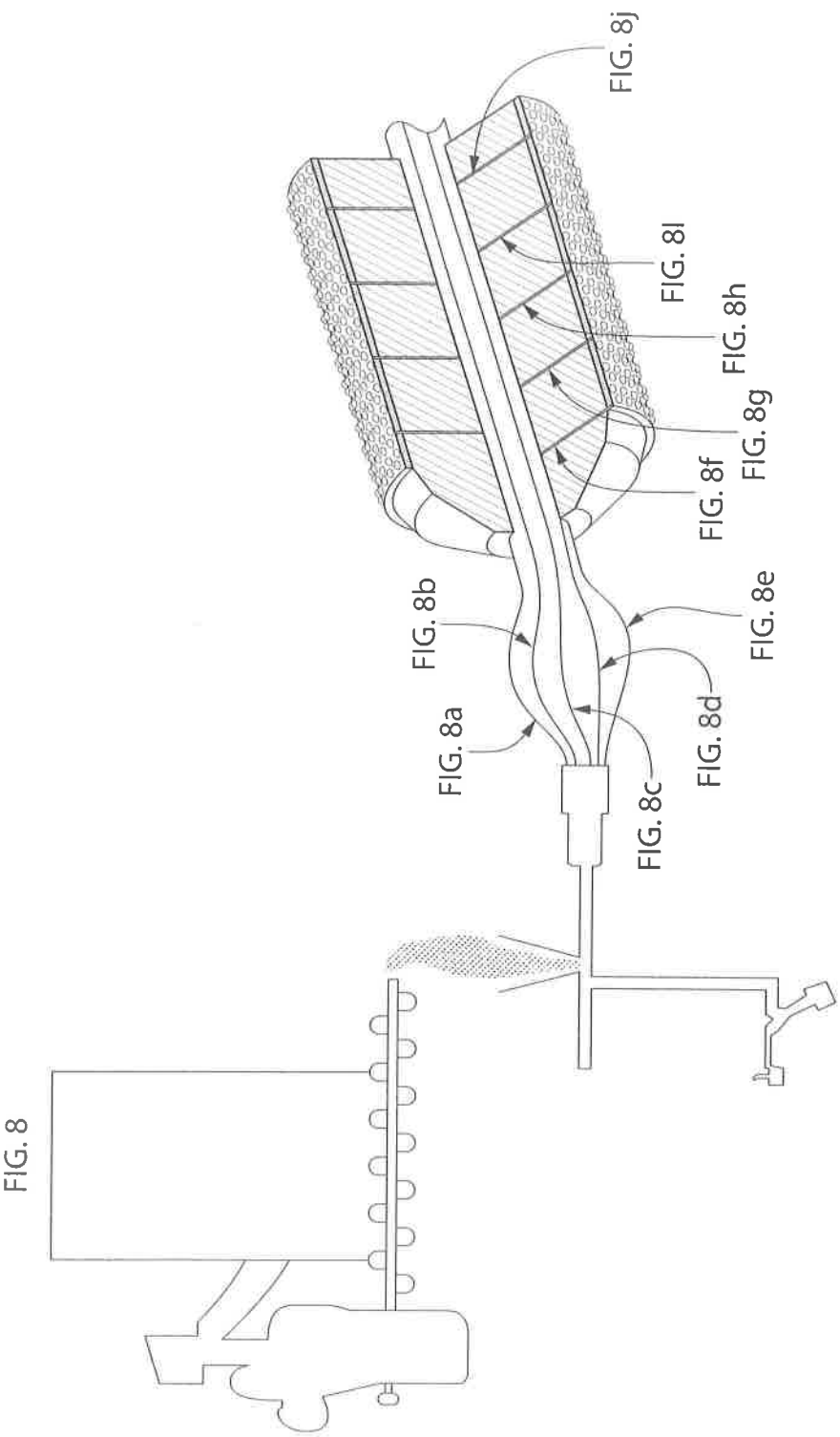
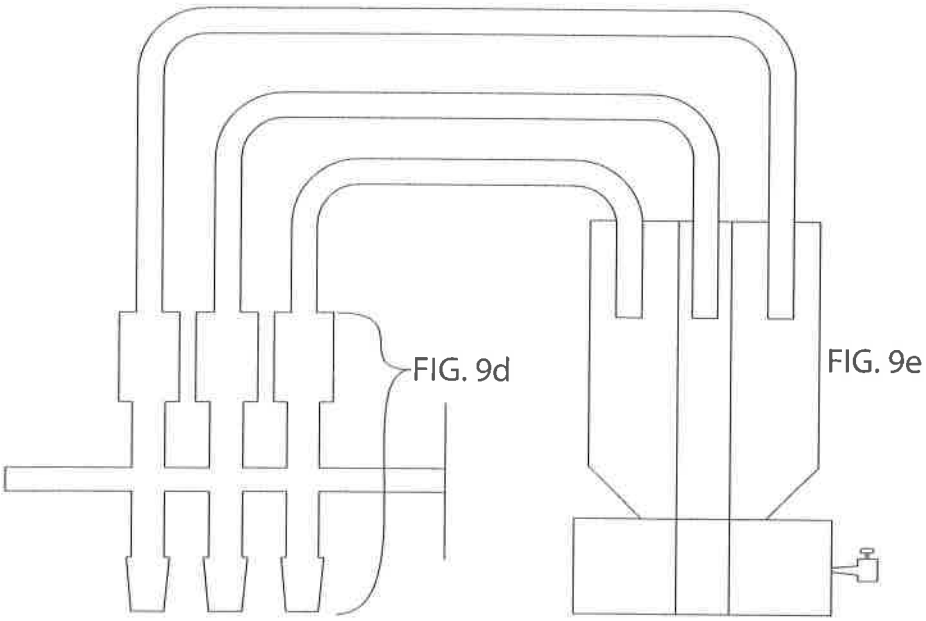

FIG. 8
FIG. 8a
FIG. 8b
FIG. 8c
FIG. 8d
FIG. 8e
FIG. 8f
FIG. 8g
FIG. 8h
FIG. 8l
FIG. 8j

FIG. 9



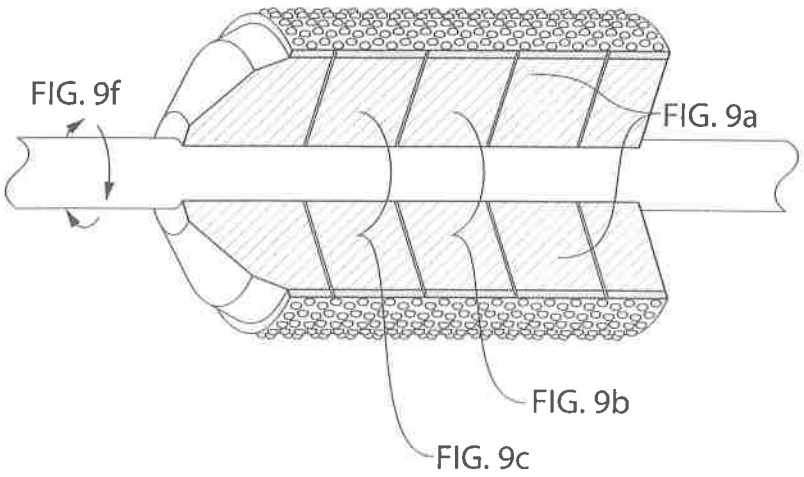
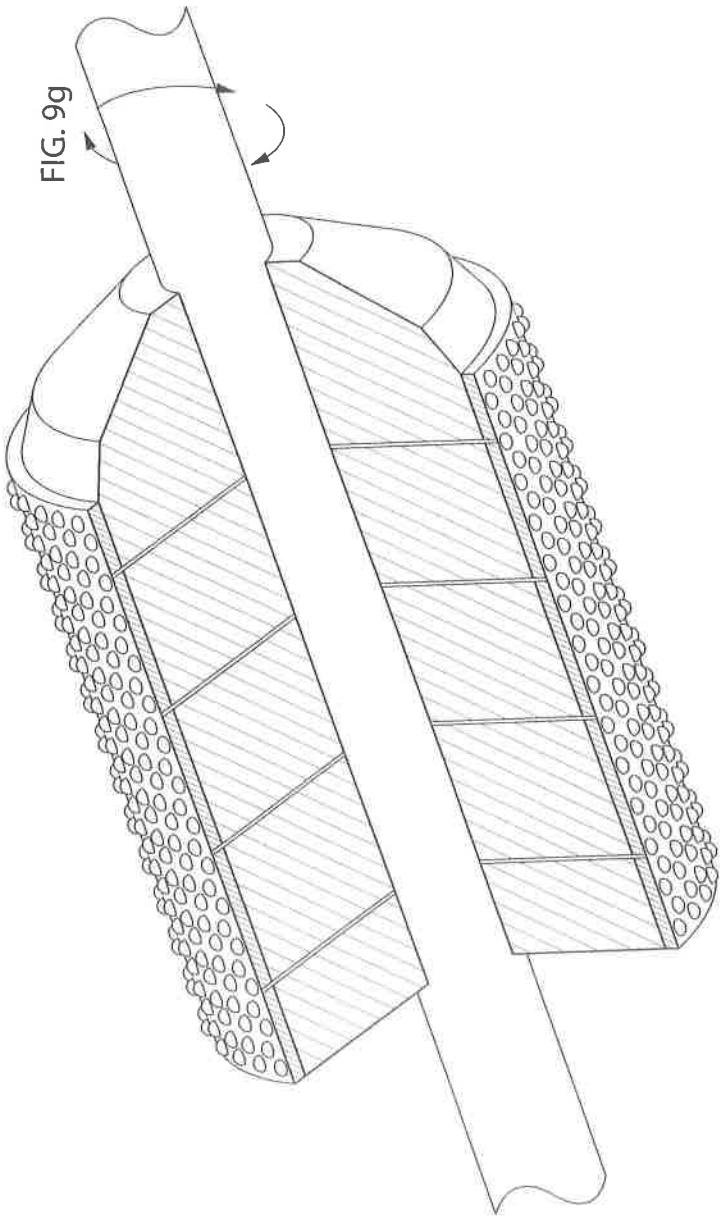


FIG. 9g



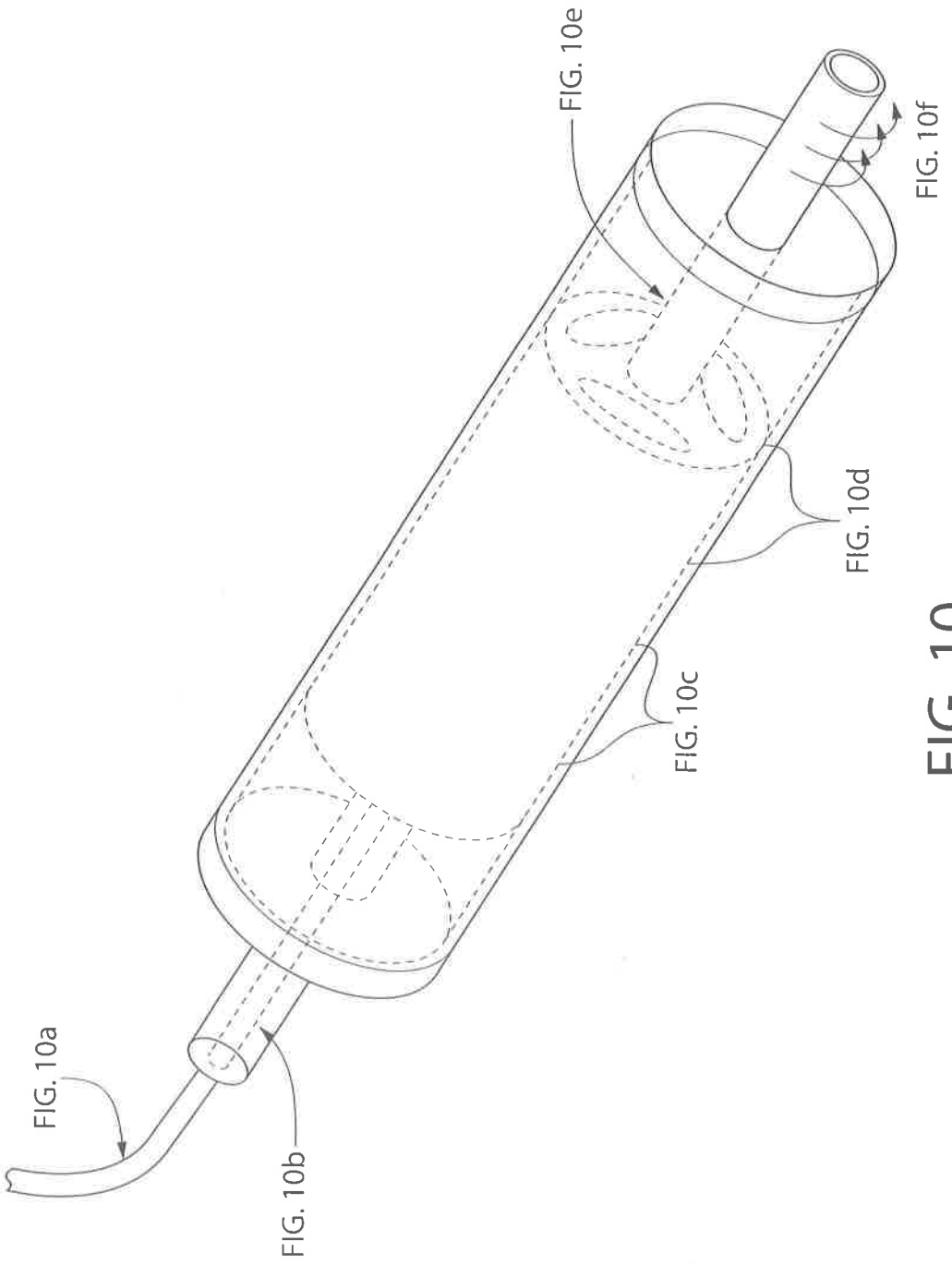


FIG. 10