COMMERCE AND INTELLECTUAL PROPERTY OFFICE

PATENTS ACT, CAP 314

(Section 43; Regulation 26 (3))

NOTICE OF GRANT OF PATENT

Volume 9 No: 11

TAKE NOTICE that the following Patent has been granted:

Title: FLOATING LAKE SYSTEM AND METHODS OF TREATING WATER WITHIN A FLOATING LAKE

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Priority Country:	United States of America
Priority Numbers:	61/900,308 & 14/531,395
Priority Dates:	5th November, 2013 & 3rd November, 2014
Documents/References cited Of Prior Arts:	• US 2011/210076 A1 • US 2013/264261 A 1 • US 2012/024796 A1 • US 2012/024794 A1

Effective Date of Grant of Patent: 22nd April, 2024

Abstract: The present invention relates to floating lakes and to the treatment of the water in such lakes. The present invention further relates to large floating lakes that can be installed within a natural or artificial water body to improve water conditions that are unsuitable for recreational uses. The floating lake can be provided with a chemical application system; a filtration system including a mobile suctioning device and filters; a skimmer system, and optionally a coordination system.

Claims

1. An artificial floating lake system for recreational purposes comprising:

    a) floating lake having a surface area larger than 5,000 m^2 and installed within a larger water body selected from an ocean, river, lake, reservoir, lagoon, pond, canal, estuary, stream, ocean bay, river bay, dam, pond, harbor, and bay, the floating lake comprising a flexible bottom having a Young's modulus of less than about 20 GPa and walls having a rim, wherein the rim comprises a flotation system;

    b) a chemical application system for applying an oxidant or flocculant to the water in the floating lake; wherein the chemical application system is activated to apply an oxidant to water in the floating lake to establish an oxidation-reduction potential (ORP) in the water of at least 550 mV for about 10 to about 20 hours within a 52-hour cycle;

    c) a pumping system for supplying replacement water to the floating lake to maintain a positive pressure against an inner surface of the walls and bottom of the floating lake, wherein the positive pressure is at least 20 Newtons per square meter of the surface area of the floating lake, wherein the positive pressure is maintained for at least 50% of the time within 7-day intervals, and wherein the replacement water has a true color of up to 35 Pt—Co and less than 2,000 CFU/ml of bacterial count;

    d) a mobile suctioning device capable of moving along the flexible bottom of the floating lake and suctioning a portion of water from the bottom containing settled solids, wherein the mobile suctioning device is configured to be activated before a black component of the bottom of the floating lake exceeds 30% on a CMYK scale, wherein the CMYK scale denotes a Cyan, Magenta, Yellow and Black color scale;

    e) a filtration system in fluid communication with the mobile suctioning system, wherein the filtration system receives the portion of water suctioned by the mobile suction system; and

    f) a return line for returning filtered water from the filtration system to the floating lake.

2. The floating lake system of claim 1, wherein the bottom and walls of the floating lake are constructed of non-permeable materials that are capable of maintaining a body of water inside the floating lake and essentially separate the water on the inside of the floating lake from the surrounding artificial or natural body of water.

3. The floating lake system of claim 1, wherein the bottom comprises a single non-permeable layer to separate the water inside the floating lake from the surrounding water body.
4. The floating lake system of claim 1, wherein the bottom comprises a plurality of layers to separate the water inside the floating lake from the surrounding water body.
5. The floating lake system of claim 4, wherein the plurality of layers can be of the same or different materials and have different permeability.
6. The floating lake system of claim 1, wherein the bottom comprises a structural frame comprising one or more frame components capable of providing more stability and/or a modular configuration to the bottom.
7. The floating lake system of claim 6, wherein the bottom comprises frame connectors between the frame components.
8. The floating lake system of claim 1, wherein the floating lake includes one or more rails for providing connection between the flexible bottom and the one or more frame components.
9. The floating lake system of claim 6, wherein the frame components are constructed out of rigid materials.
10. The floating lake system of claim 9, wherein the rigid materials of the frame components comprise metal, metal alloys, plastics, wood, concrete, or combinations thereof.
11. The floating lake system of claim 6, wherein the frame components are constructed out of flexible materials.
12. The floating lake system of claim 11, wherein the flexible materials of the frame components comprise rubber, plastic, fabric, nylon, or combinations thereof.
13. The floating lake system of claim 7, wherein the frame connectors are built out of flexible materials.
14. The floating lake system of claim 7, wherein the frame connectors are built out of rigid materials.
15. The floating lake system of claim 1, wherein the bottom comprises one or more cushion-type cells capable of providing a stable bottom.
16. The floating lake system of claim 15, wherein the cushion-type cells are filled with a fluid comprising gas or liquid, or a foam expandable material, or a combination thereof.

17. The floating lake system of claim 1, wherein the flotation system comprises one or more flotation elements selected from the group consisting of polyurethane systems; polystyrene systems, such as extruded polystyrene and expanded bead polystyrene; polyethylene systems; air filled systems, such as air chambers, rubber air bags, or vinyl air bags; and systems constructed of other suitable materials such as plastics, foams, rubbers, vinyl, resins, concrete, aluminum, different types of woods, and combinations thereof.
18. The floating lake system of claim 1, wherein the floating lake comprises one or more additional features selected from beaches, walkways, pedestrian promenades, pontoons, handrails, or sloped entry systems.
19. The floating lake system of claim 1, wherein the bottom and/or walls of the floating lake are anchored to the bottom of the surrounding water body to cope with marine currents, winds, tides and specific weather conditions of the surrounding water body and environment.
20. The floating lake system of claim 1, wherein the floating lake system comprises one or more anchor points connected to corresponding anchor points at the bottom of the surrounding water body.
21. The floating lake system of claim 1, wherein the floating lake is anchored to mainland to provide an entrance to the floating lake system.
22. The floating lake system of claim 1, wherein the floating lake is separated from mainland by a distance, and entrance from mainland to the floating lake is provided by one or more of docks and bridges connecting the mainland to the floating lake.
23. The floating lake system of claim 1, wherein the floating lake system comprises a coordination system.
24. The floating lake system of claim 23, wherein the coordination system is arranged and configured to receive information regarding water quality parameters, process the information, and activate the chemical application means and/or activate operation of the mobile suctioning device, and/or filtration system.
25. The floating lake system of claim 1, wherein the bottom material is a flexible material selected from the group consisting of rubbers, plastics, teflon, low density polyethylene, high density polyethylene, polypropylene, nylon, polystyrene, polycarbonate, Polyethylene Terephthalate, fibers, fiberboard, woods, polyamides, PVC membranes, fabrics, composite fabrics, geomembranes, acrylics, and combinations thereof.

26. The floating lake system of claim 1, wherein the walls comprise a permeable material that allows for water from the water body in which the floating lake is installed to pass through the walls at a predetermined permeation rate.
27. The floating lake system of claim 1, wherein the system comprises a plurality of mobile suctioning devices, wherein the filtration system comprises a plurality of filters.
28. The floating lake system of claim 1, where the bottom has a white, yellow, or light blue color, or combinations thereof.
29. The floating lake system of claim 1, further comprising a feed line from the floating lake to a heat exchanger system in an industrial process for feeding the heat exchanger with water from the floating lake and a return water line from the heat exchanger of the industrial process to the floating lake.

FIG. 1

FIG. 2

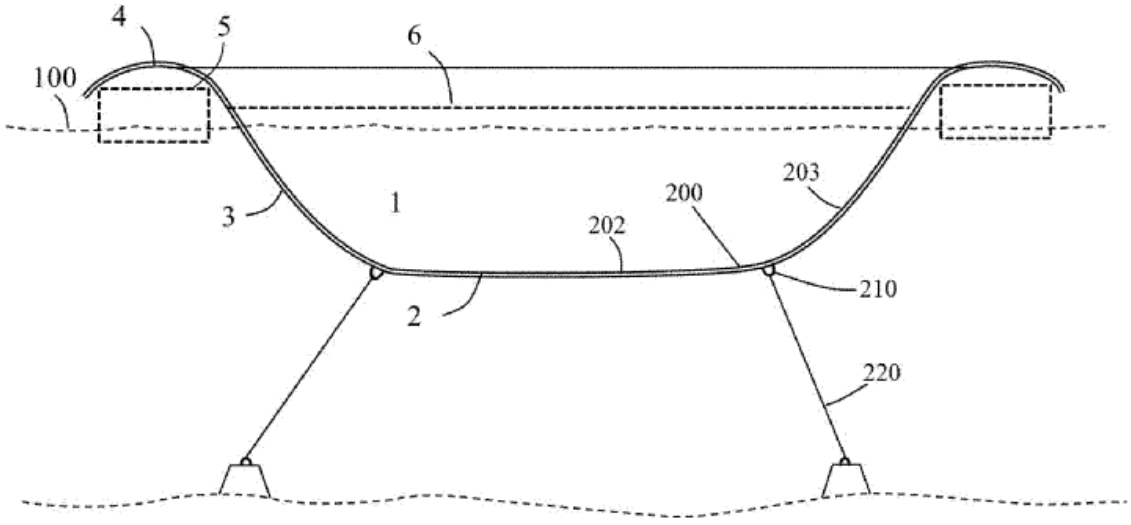

FIG. 3

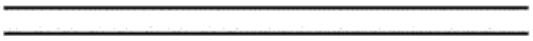

FIG. 4A

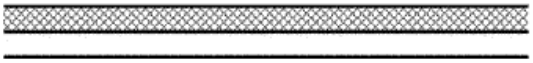

FIG. 4B

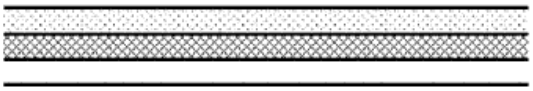

FIG. 4C

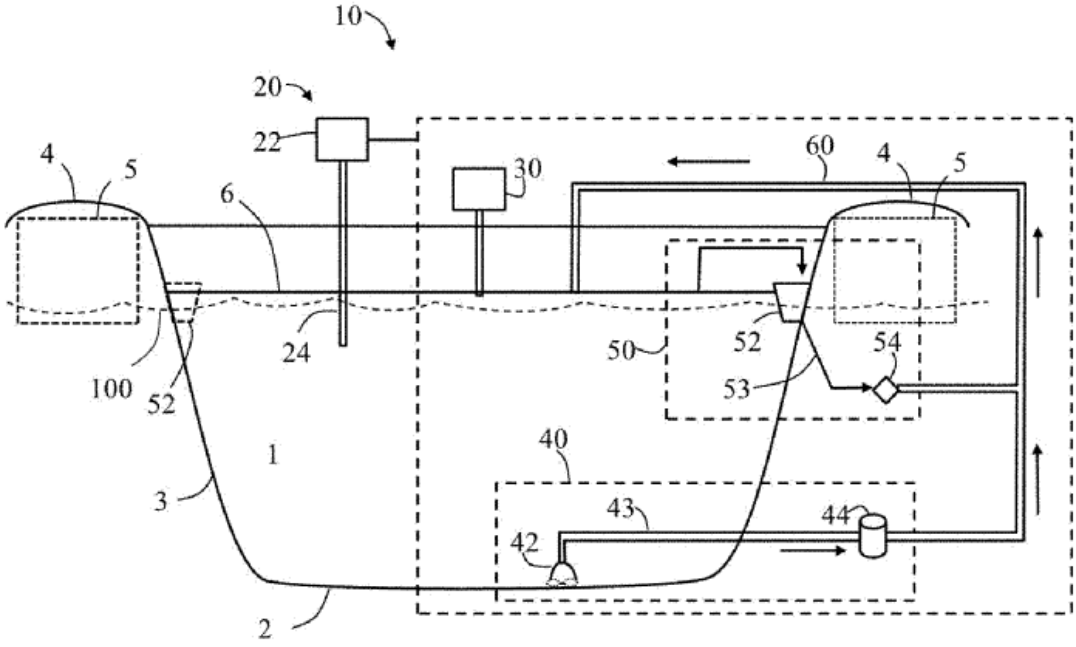
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FIG. 5

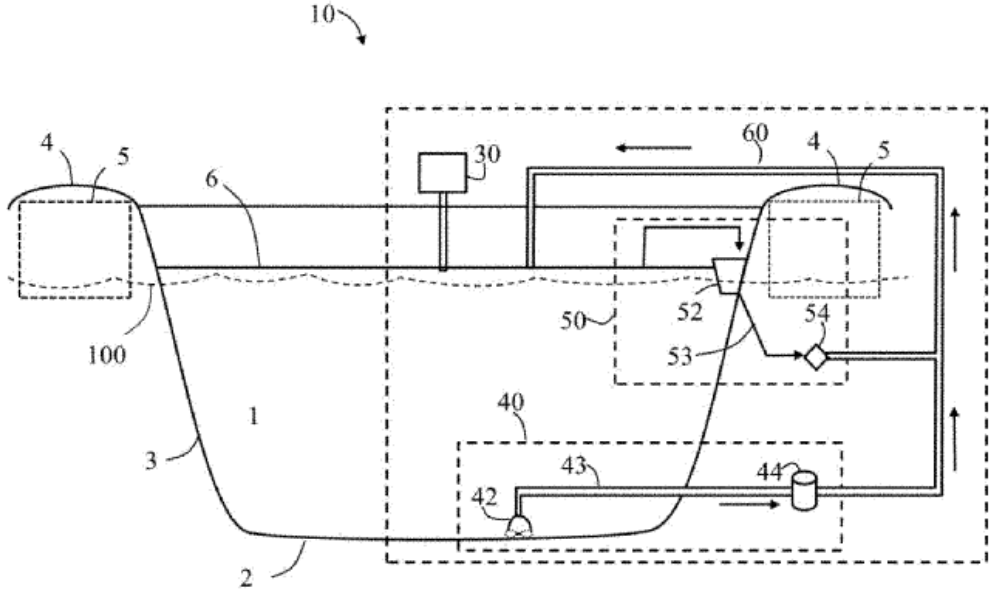
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FIG. 6

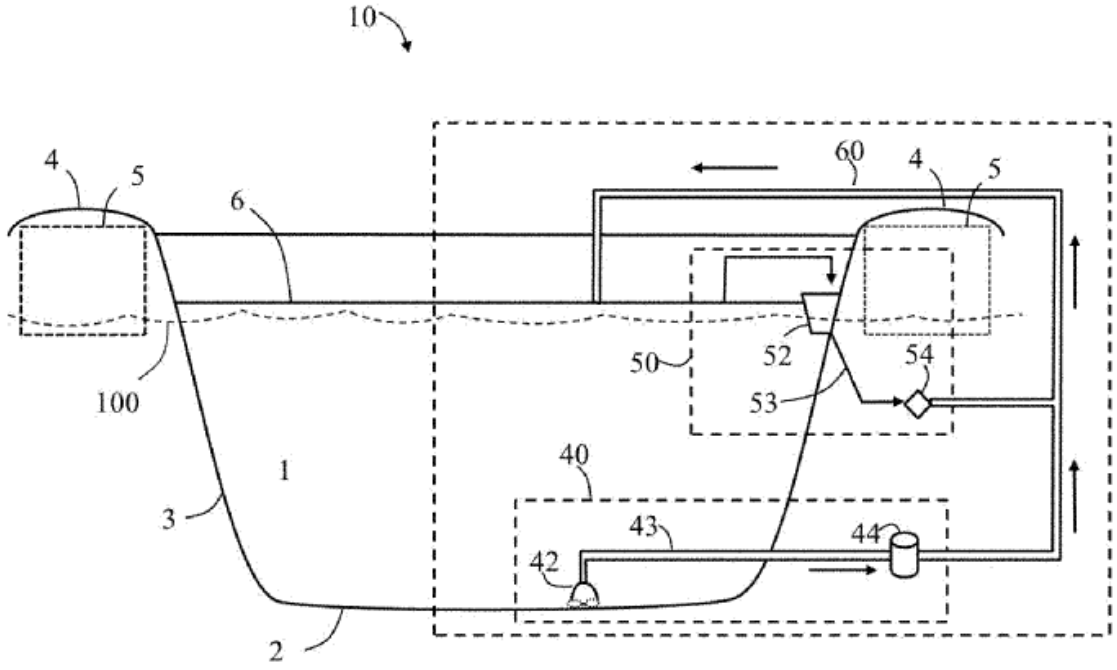
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FIG. 7

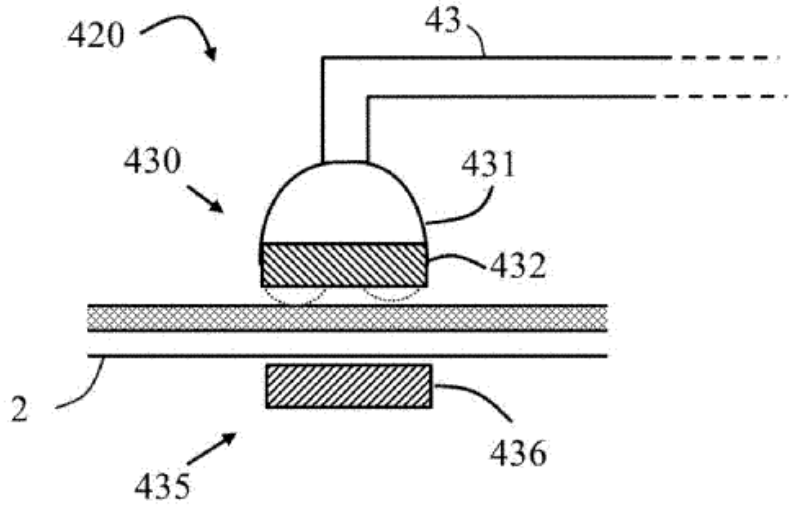
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FIG. 8

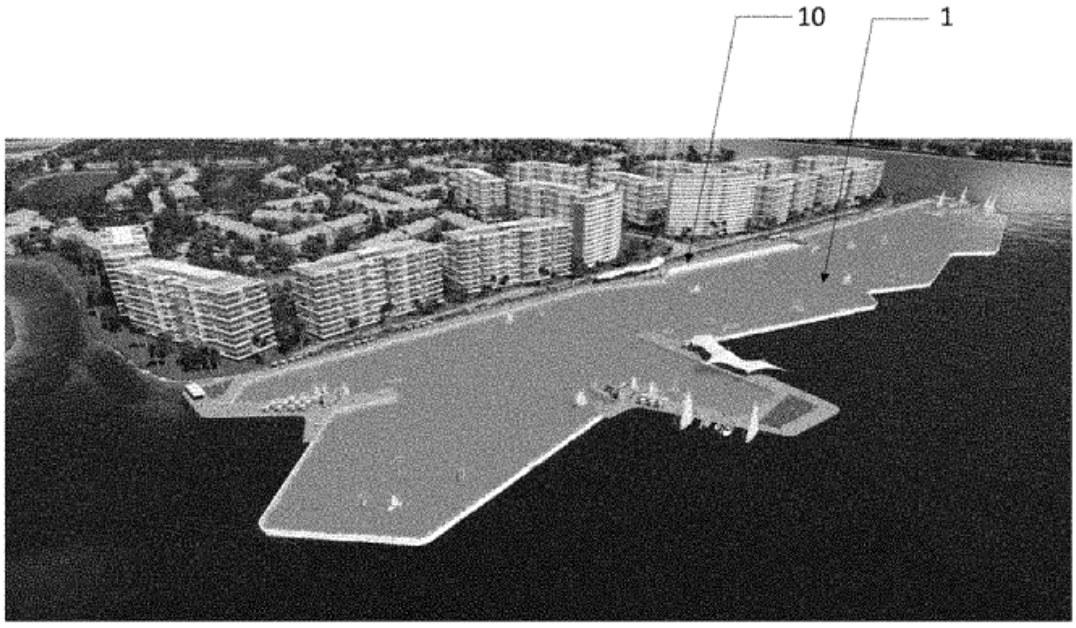

FIG. 9A

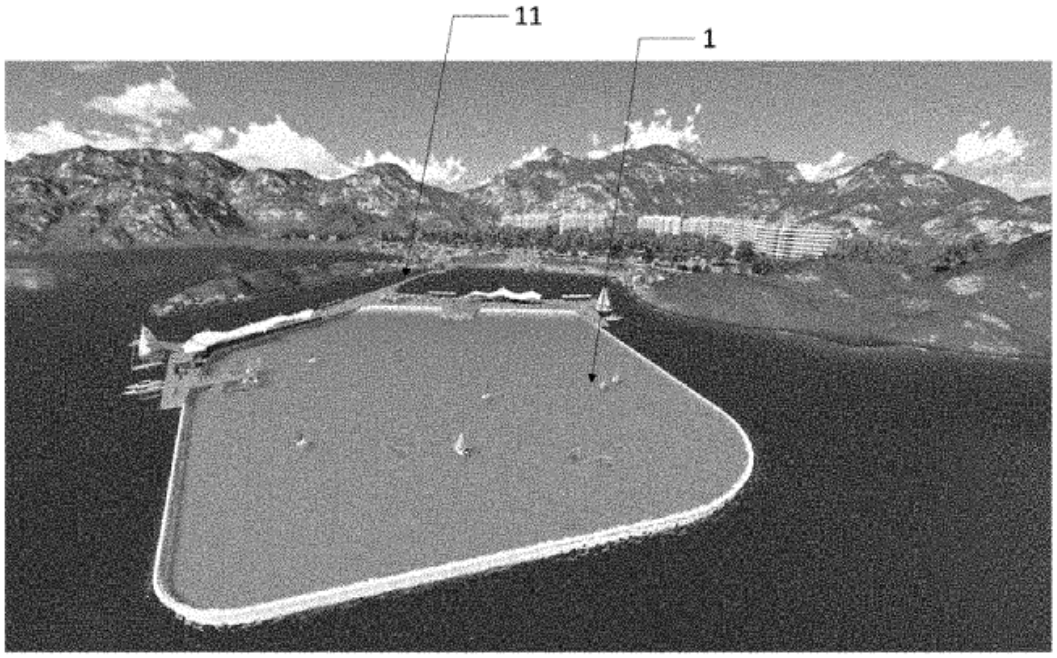

FIG. 9B

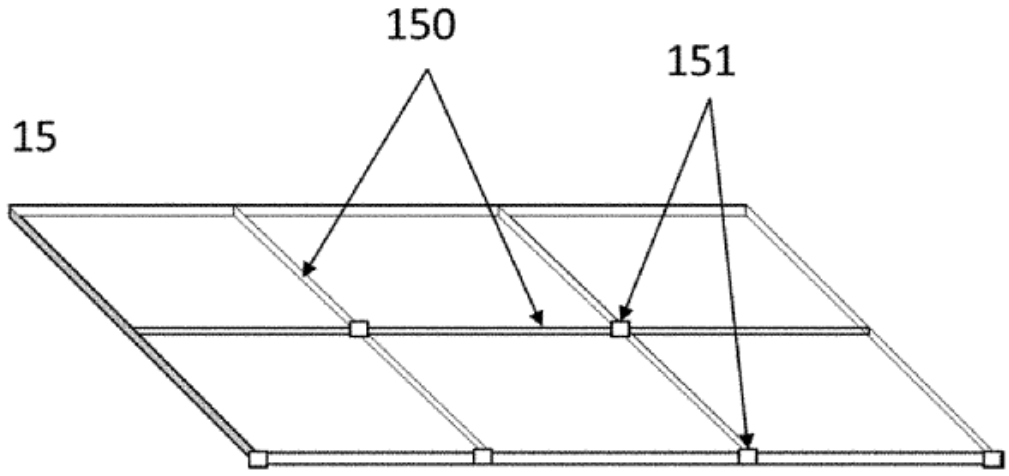

FIG. 10A

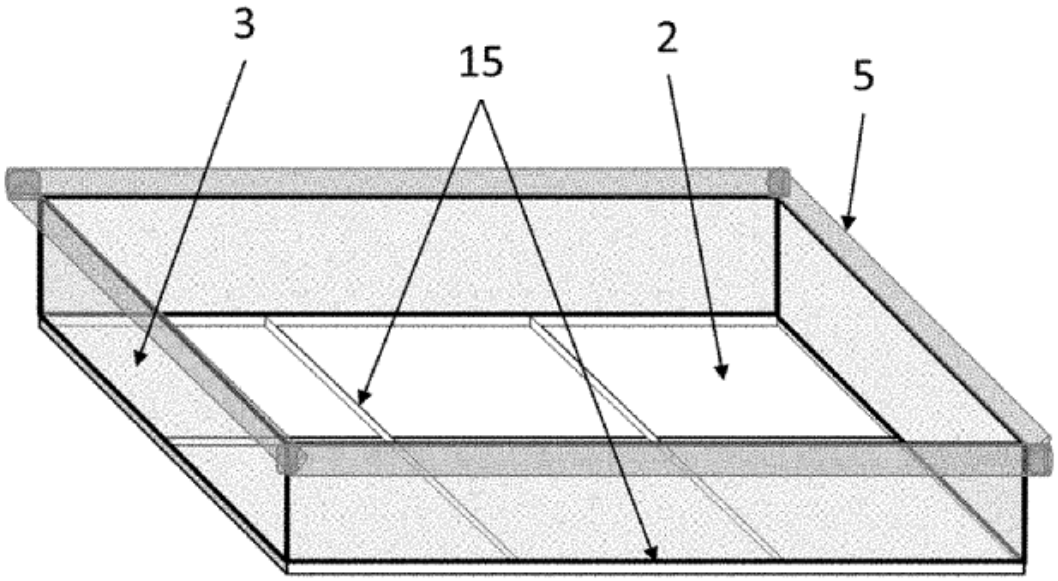

FIG. 10B

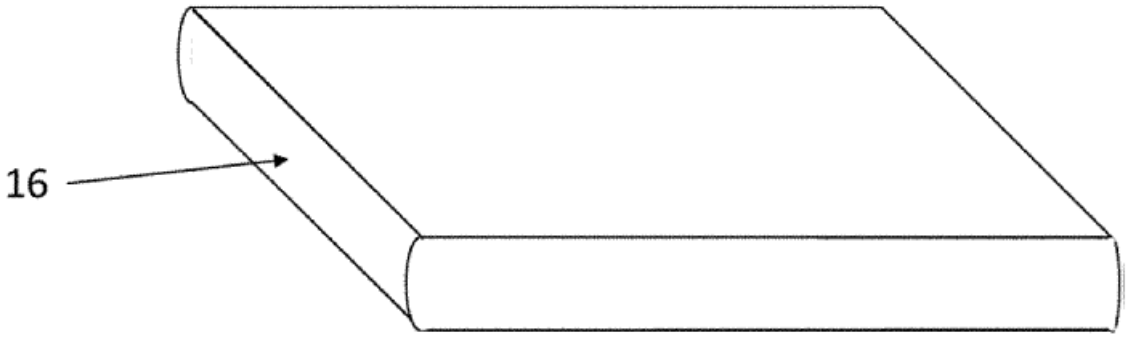

FIG. 11A

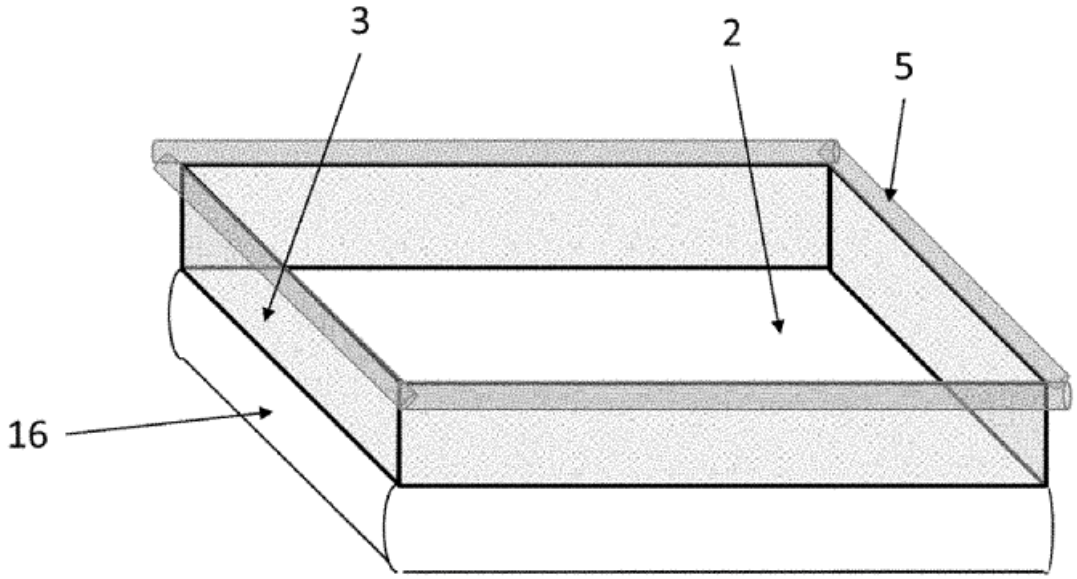

FIG. 11B

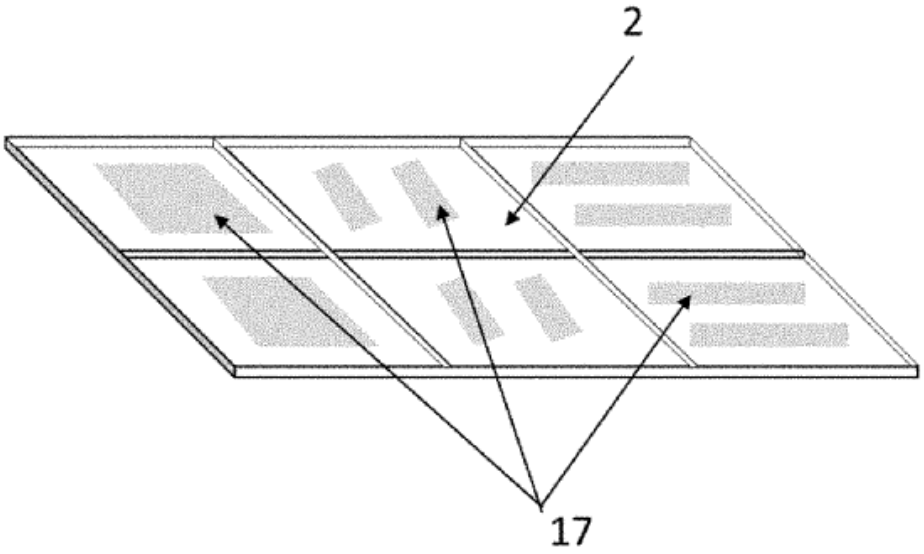

FIG. 12A

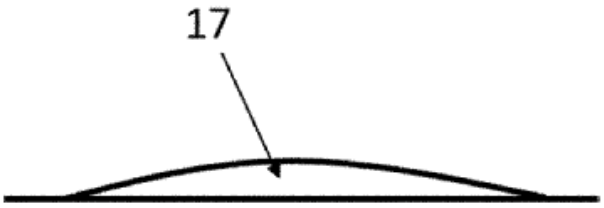

FIG. 12B

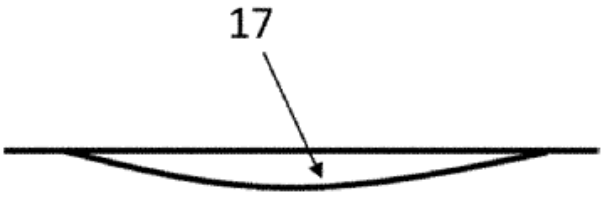

FIG. 12C

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