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(54) **UNDERWATER PREMISES**
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EP 3 147 427 B1

Description

[0001] The present invention relates to an underwater multi-facility hub constituting a pedestrian passage premises in connection with at least two urban or sub-urban fabrics separated by a body of water, for example particularly, but not exclusively, underwater premises for retail, commercial, entertainment, recreational and/or cultural facilities in connection with the urban or sub-urban fabrics.

BACKGROUND OF THE INVENTION

[0002] In a metropolitan city, land is of limited supply. Urban fabrics are established on pieces of precious and scattered lands or isolated areas due to geographical constraint. Urban fabrics are usually self-contained but saturation may occur for example employment opportunity. Introduction of resources and expertise may be required. These are some of the reasons for mobilization of manpower between urban fabrics. This is hindered by the separation of the urban fabrics and especially for example when the urban fabrics are distributed in the form of an archipelago. The existence of transportation network such as a tunnel or a bridge brings the urban fabric closer. JP4-371676 discloses an underwater dome connected to the ground through tunnels. US2005/0274312 discloses a self-sufficient man-made island complex with a plurality of interconnected islands. US5899635A discloses an underwater tunnel system for vehicular traffic flow. However, there is no added benefit other than increasing the mobility between the urban fabrics.

[0003] Underwater premises in general are known. CN101105080A discloses urban premises with an underwater restaurant. JP2001354192A discloses a floating facility that is arranged to rotate. However, they are only underwater premises without increasing the mobility between the urban fabrics. KR20150053056 discloses an underwater multi-facility hub which is closest to the subject-matter of claim 1 of the present invention.

[0004] As land is of limited supply, there are problems in providing sufficient land for building retail, commercial, entertainment, recreational and/or cultural facilities. The overall costs in securing the land for construction are transferred to the users, resulting in a continuous rise in the cost of living.

[0005] The invention seeks to eliminate or at least to mitigate such shortcomings by providing new or otherwise improved underwater premises in connection with at least two urban or sub-urban fabrics.

SUMMARY OF THE INVENTION

[0006] According to the invention, there is provided an underwater multi-facility hub constituting a pedestrian passage (100) including retail, commercial, entertainment, recreational and/or cultural facilities, for connecting at least first and second urban or sub-urban fabrics

(A, B and C) separated by a body of water, comprising an enclosed structure located below the surface of said body of water and defining an interior of the structure, which interior includes a pedestrian walkway defined by retail spaces that are provided along entire longitudinal extent of the interior and on opposite sides thereof to form two parallel rows of retail, spaces, the structure has at least first and second entrances and/or exits (101) at different parts of the interior and permitting access between the pedestrian walkway and said at least first and second urban or sub-urban fabrics (A, B and C) respectively, wherein the pedestrian walkway extends across said at least first and second entrances and/or exits (101) via the interior of the structure and providing access to the retail spaces (103) for enjoyment and use by people, such retail spaces provide shopping opportunity and a continuous shopping experience when the urban fabrics (A, B and C) are shopping centers, thereby creates a shopping hub which thereby encourage people to stay in ; characterized in that the interior of the structure is compartmentalized in cross-section to provide divisions, the pedestrian walkway and the retail spaces are provided in a main division of the divisions, means of egress are provided with a first support division of the divisions having pedestrian passageway for people inside the interior to evacuate in the case of emergency, and a second support division of the divisions includes means of fire-fighting access which includes a vehicle passage that extends along the interior, each of the means of egress and means of fire-fighting access extends across first and second entrances and/or exit.

[0007] Preferably, the structure is submerged and is located on or above the bottom of said body of water.

[0008] More preferably, the structure is buried in the bottom of said body of water.

[0009] It is preferable that the divisions are storeys to provide one or more levels of said spaces in the interior.

[0010] Advantageously, the structure has at least three storeys to provide respective levels of said spaces in the interior, the levels of spaces being in communication with one another and sharing each of said at least first and second entrances and/or exits at a respective part of the interior.

[0011] More advantageously, the underwater multi-facility hub further includes a ventilation system which extends across the first and second entrances and/or exits(101).

[0012] It is advantageous that said at least first and second entrances and/or exits (101) provide access to the means of egress or escape in the structure for evacuation to places of safety within specific timeframe in case of emergency.

[0013] Preferably, the means of egress or escape (105) includes subdivision of the interior of the structure into two or more fire compartments for preventing spread of fire.

[0014] More preferably, the means of fire-fighting access (106) is designated and protected to enable fire-

fighting and effect rescue in case of fire.

[0015] It is preferable that the means of fire-fighting access (106) comprises an adequate number of land access points predetermined by cross-sectional size of the interior of the structure.

[0016] Advantageously, the land access points comprise at least one of said at least first and second entrances and/or exits (101).

[0017] More advantageously, the means of fire-fighting access (106) is of a specific cross-sectional size to permit access by a customized firefighting vehicle.

[0018] Preferably, the interior of the structure includes one or more logistic zones (119) extending from at least one of said at least first and second entrances and/or exits (101) to said retail spaces for commercial entertainment, recreational and/or cultural facilities.

[0019] More preferably, the logistic zones (119) is separated from the means of egress or escape (105) and means of fire-fighting access (106).

[0020] Yet more preferably, the ventilation system comprises a network of air ducts for air intake and exhaust.

[0021] It is preferable that the network of air ducts is in communication with the atmosphere at a location in the structure, which is above the surface of said body of water or below the surface of said body of water with an underwater connection that extends to above the surface of said body of water.

[0022] Preferably, the means of egress or escape (105) and the means of fire-fighting access (106) comprise a pressurization air system which suppresses the ingress of smoke to the means of egress or escape (105) and the means of fire-fighting access (106).

[0023] The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 15 to 17, further including a smoke extraction system to serve the retail, commercial, entertainment, recreation and/or cultural facilities.

[0024] Yet more preferably, the structure has a wall that includes no window or at least one window (113) to enable viewing of underwater features from the interior, the said at least one window (113) whether or not being closable by a shield.

[0025] More preferably, the structure itself or the structure has extendable storey or storeys that can rise above water or submerge into water to enable viewing of above-water and underwater features from the interior, the said at least one window (113) whether or not being closable by a shield.

[0026] It is preferable that the underwater multi-facility hub includes framework or facilities to support the enjoyment and use by people whilst walking along the at least one route from one of said at least first and second urban fabrics (A, B and C) to another of said first and second urban or sub-urban fabrics (A, B and C) or vice versa.

[0027] Preferably, the framework or facilities comprises at least some of air conditioning system, electricity

and lighting system, gas system, water supply system, drainage system and supporting facilities

BRIEF DESCRIPTION OF DRAWINGS

[0028] The invention will now be more particularly described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a schematic diagram of an embodiment of the invention in the form of an underwater premises connecting at least two urban or suburban fabrics, for example three as shown;

Figure 2 is a schematic cross-sectional view of the underwater premises and two of the urban or suburban fabrics of Figure 1;

Figure 3 is schematic illustration of a floor plan of each of three levels in the underwater premises of Figure 1;

Figure 4 is a schematic cross-sectional view a possible arrangement for the underwater premises in a specific geographical location, where the underwater premises is buried in the bottom of a water body;

Figure 5 is a schematic cross-sectional view of a possible arrangement for the underwater premises in another specific geographical location, where the underwater premises is located above the bottom of a water body;

Figure 6 is a schematic cross-sectional view of a possible arrangement for the underwater premises in a further specific geographical location, where the underwater premises is partially buried in the bottom of a water body;

Figure 7 is a schematic cross-sectional view of a part of the underwater premises of Figure 6, with a window to be provided at a sidewall;

Figure 8 is a schematic cross-sectional view of a possible arrangement for the underwater premises in a specific geographical location, where the underwater premises includes an extendable storey above water or submerged into water;

Figure 9 is a first cross-sectional view of the underwater premises of Figure 3, showing in particular a general ventilation arrangement thereof;

Figure 10 is a second cross-sectional view of the underwater premises of Figure 3, showing the ventilation arrangement in case of fire at pedestrian aisles/commercial space thereof;

Figure 11 is a third cross-sectional view of the underwater premises of Figure 3, showing the ventilation arrangement in case of fire at a logistic zone thereof;

Figure 12 is a fourth cross-sectional view of the underwater premises of Figure 3, taken along line A-A, showing the general arrangement thereof;

Figure 13 is a schematic plan, on an enlarged scale, of one of the urban or suburban fabrics in connection with the underwater premises of Figure 1; and

Figure 14 is a schematic cross-sectional view of the urban or suburban fabric in connection with the underwater premises of Figure 13.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0029] Referring initially to Figures 1 and 2 of the drawings, there is shown an underwater premises 100 for retail, commercial, entertainment, recreational and/or cultural facilities embodying the invention, which is in connection with or preferably inter-connecting at least first and second urban or sub-urban fabrics separated by a body of water or, for example, three urban or sub-urban fabrics A, B and C as shown. The underwater premises 100 is for example as shown in Figure 1 in the form of a Y-shaped underwater structure or establishment. The structure defines an interior for the provision of retail, commercial, entertainment, recreational and/or cultural facilities.

[0030] The physical shape and form of the underwater premises 100 are dependent upon the locations of the urban or sub-urban fabrics A, B and C, the environmental geographical landscape of the spot as well as that within the vicinity or in adjoining regions.

[0031] The urban or sub-urban fabrics A, B and C together with the underwater premises 100 form a conjointment that promotes a continuous retail, commercial, entertainment, recreational and/or cultural experience and enjoyment for members of the general public when travelling from one to another of the urban or sub-urban fabrics A, B and C. The invention intends to provide a linkage for bringing together urban or sub-urban fabrics A, B and C while utilizing the space in the linkage to enhance the travel experience of users.

[0032] In a nutshell, the underwater premises 100 comprises an enclosed structure located below the surface of the body of water situated between islands or otherwise separated pieces of lands, such as the Sydney Harbour in Australia, Keppel Harbour in Singapore, Upper New York Bay or the New Work Harbour in New York, the Victoria Harbour in Hong Kong, Tokyo Bay in Japan and Gulf de Napoli in Italy, and defining an interior of the structure, which provides or creates spaces 103 for retail, commercial, entertainment, recreational and/or cultural

facilities. Access to the urban or sub-urban fabrics A, B and C is made possible via respective entrances and/or exits 101 at different parts of the interior of the structure of the underwater premises 100.

[0033] The entrances and/or exits 101 act as ports, portals or the like allowing people to enter the underwater premises 100 from the connected urban or suburban fabrics A, B and C, and/or to leave the underwater premises 100.

[0034] In a preferred embodiment, the entrances and/or exits 101 are preferably underground, conjoining pieces of the urban or sub-urban fabrics A, B and C at a level below ground or the sea level. As an alternative, the entrances and/or exits 101 may be built above ground. It is also possible for the entrances and/or exits 101 to stretch across the above ground level and the underground level. The entrances and/or exits 101 may be located at any part of the underwater premises 100 and not necessarily an extreme end thereof. For example, the structure of the underwater premises 100 may be in the form of a ring or loop rather than a branched (e.g. Y-shaped) configuration. Hence, the entrances and/or exits 101 may be provided at any point along the length of the underwater premises 100, providing access to the respective urban or sub-urban fabrics A, B and C. Another possibility would be to have only one entrance and/or exit 101 in the situation where one of two urban or sub-urban fabrics A and B, A and C or B and C is underground, for example in the middle of a mass of water. Access to the structure would then rely on a single entrance and/or exit 101.

[0035] The structure of the underwater premises 100 further includes at least one route 102 for ambulation preferably on foot. The route 102 is preferably a circuit route. The route 102 extends across the entrances and/or exits 101 via the interior of the structure of the underwater premises 100 and provides access to a plurality of spaces 103 with identified or assigned purposes. The spaces 103 are preferably for retail, commercial, entertainment, recreational and/or cultural facilities, for continuous enjoyment and use by people within the structure. Such spaces 103 are underwater and are mainly provided for retail, commercial, entertainment, recreational and/or cultural purposes. These spaces 103 offer business and job opportunities while bringing alive the structure of the underwater premises 100.

[0036] In a preferred embodiment, the spaces 103 offer a continuation or extension of shopping experience via the entrances and/or exits 101 from or relative to the urban or sub-urban fabrics A, B and C. The underwater premises 100 thereby forms a shopping hub or for such other uses and enjoyment by people as and when the spaces 103 are equipped for retail, commercial, entertainment, recreational and/or cultural facilities, whilst commuting therealong. The structure of the underwater premises 100 and the urban or sub-urban fabrics A, B and C are conjoined to form a shopping establishment in a substantially underground and/or underwater trans-

portation network.

[0037] As shown in Figure 1, taking the urban fabric A for example, there may be an elevated walkway A1 that leads to the entrance and/or exit 101 at a preferred level above ground. In addition or as an alternative, there may be a basement walkable link A2 that leads to the same entrance and/or exit 101 at another preferred level which may or may not be underground. Space A3 for retail, commercial, entertainment, recreational and/or cultural activities may be provided at the basement. The basement walkable link A2 leads through to the space A3 and provides access to the whole area. The walkable link A2 connects to the interior of the structure of the underwater premises 100 through the entrance and/or exit 101. The space in the interior is equipped with retail, commercial, recreational, entertainment and/or cultural facilities resulting in the continuation of the shopping, commercial, entertainment, recreational and/or cultural experience in the basement of the urban or sub-urban fabric A.

[0038] The structure of the underwater premises 100 may be submerged in water, wholly or partially. Referring to Figure 2, there is shown a preferred embodiment of the structure of the underwater premises 100 being buried in the bed of the body of water. This would be suitable for application in the geographical condition of the Sydney Harbour in Australia, Keppel Harbour in Singapore, Upper New York Bay or the New Work Harbour in New York, the Victoria Harbour in Hong Kong, Tokyo Bay in Japan or Gulf de Napoli in Italy. In another embodiment, the structure of the underwater premises 100 may be elevated from the bottom of the body of water, hence located above the bed thereof, such that the underwater premises 100 may be in the form of a submerged structure, supported on for example pillars and/or frames, and joining the urban or suburban fabrics A, B and C together. In yet another embodiment, the structure of the underwater premises 100 may be partially buried in the bottom of the body of water, hence embedded, at least partially, in the bed of the body of water.

[0039] The building of the underwater premises 100 will involve digging of the bed of the body of water. There may be environmental concerns and would only be applicable in certain locations with specific permission. In that case, the entrances and/or exits 101 may be provided underwater or above the water level dependent upon the position of the access to the urban or sub-urban fabric A, B and C.

[0040] The structure of the underwater premises 100 includes one or more storeys to provide one or more levels of spaces 103 in the interior. This may involve the entire structure of the underwater premises 100 or only a part or parts thereof. The restriction would generally be environmental. Different levels of the spaces 103 are in communication with one another and preferably share the same entrance and/or exit 101 at each respective part of the interior of the structure of the underwater premises 100.

[0041] At each level, the spaces 103 are provided

along the longitudinal extent of the interior of the underwater premises 100 and preferably on opposite lateral sides thereof to form two parallel rows of spaces 103 maximized for retail, commercial, entertainment, recreational and/or cultural facilities as desired. At preferred locations along the interior, there are provided means of egress or escape 105 and means of fire-fighting access 106. All such facilities 105 and 106 extend along the length of the interior across, or reaching, the entrances and/or exits 101 at opposite ends of the structure of the underwater premises 100.

[0042] In the preferred embodiment as shown in Figure 3, the structure of the underwater premises 100 preferably includes three storeys or levels. The first level 110 includes two parallel rows of commercial spaces 103 partitioned into outlets for retail and for food and beverages along the length of the structure. Extending between the two parallel rows of commercial spaces 103 is a main pedestrian corridor or aisle 104 which forms part of the route 102. Provided at specific locations are accesses to the means of egress or escape 105 and the means of fire-fighting access 106. The specific locations for access to the means of egress or escape 105 and the means of fire-fighting access 106 are predetermined according to, for example, the dimensions of the interior of the underwater premises 100.

[0043] On a second level 120, the means of egress or escape 105 extends along the length of the interior of the structure of the underwater premises 100, and provides passageway or escape routes for people inside the interior of the structure to evacuate in the case of emergency. In more detail, the means of egress or escape 105 includes two passages that extend parallel to each other and along the left and right sides of the interior of the structure of the underwater premises 100.

[0044] The main pedestrian aisle 104 includes subdivision of the interior of the structure of the underwater premises 100 into two or more fire compartments by fire shutters 108 for preventing spread of fire and smoke. The fire shutters 108 are installed at intervals along the length of the interior of the structure to compartmentalize the structure of the underwater premises 100 and in particular the main pedestrian aisle 104 and the commercial spaces 103. Such fire shutters 108 should upon activation extend across and shut off at least one of the levels 110, 120 and 130 in a direction transverse to the pedestrian aisle 104.

[0045] On the third level 130, there is provided the means of fire-fighting access 106 designated for and protected to enable firefighting as well as to effect rescue in case of fire or accident inside or in close vicinity of the structure. In this particular embodiment, the means of fire-fighting access 106 includes only one passage extending along one side of the interior longitudinally of the structure of the underwater premises 100, and is of a specific cross-sectional size to permit access by a customized firefighting vehicle. The means of fire-fighting access 106 further includes an adequate number of land

access points along length of the structure, predetermined by the cross-sectional size of the interior of the structure. Preferably, the land access points include at least one of the entrances and/or exits 101, for maximizing the degree and flexibility of access. Specific lifts 111 are assigned to access other levels of the structure for fire-fighting and rescue from the means of fire-fighting access 106.

[0046] The opposite side of the interior of the structure is lined by logistic zones 119 that permit management of resources and their distribution. One or more logistic zones 119 extend from at least one of the entrances and/or exits 101 to the spaces 103. Lifts 112 are installed at intervals to permit access to and from the logistic zones 119. Such lifts 112 take the users to various levels of the structure of the underwater premises 100. Between the means of fire-fighting access 106 and the logistic zones 119, there are arranged one or more electrical and mechanical zones 109. The electrical and mechanical zones 109 extend along the entire length of the interior to allow room and passage for electrical and mechanical installations.

[0047] With regard to the construction of the underwater premises 100, it will now be described with particular reference to Figures 4 to 8, which depict various preferred configurations and arrangements by way of graphical illustration. In Figure 4, there is shown a cross-section of the structure of the underwater premises 100 taken along its length, which is buried underwater, i.e. in the bed of the body of water i.e. seabed. It may be the entire structure being buried underwater or only a section thereof. Figure 5 shows a cross-section of the structure of the underwater premises 100 being elevated above the seabed, which is supported on an array of pillars planted into the seabed. Depending on its profile, the seabed may have a recessed region over and above which the relevant section of the structure has to run as depicted in order to be in line with adjacent sections at opposite ends thereof buried in or sitting on the seabed. Referring to Figure 6, the structure, or a section thereof, is submerged and located on, and partially buried in, the seabed.

[0048] In the preferred embodiment, as shown in Figure 7, one or more windows 113 may be formed on a sidewall of at least the first level 110 of the structure of the underwater premises 100, through which people inside the structure may view and connect themselves to the water or marine scenery outside for enjoyment being underwater. The windows 113 are preferably provided with shutters or shields for closing or sealing in case of, for example, hostile weather conditions.

[0049] As shown in Figure 8, the structure of the underwater premises 100, which is submerged and buried in the seabed, may include a tower extending upwardly above the water. The tower acts as a lookout for visitors and may in practice be utilized to provide a vent for ventilation purposes. In a complex design, the tower may house an extendable storey or storeys, as implemented by for example a lift, which can rise above water or be

submerged in water to enable viewing of above-water and underwater features from the interior.

[0050] Referring also to Figures 9 to 12, the interior of the structure of the underwater premises 100 is subdivided longitudinally in or compartmentalized in cross-section to provide the means of egress or escape 105, the means of fire-fighting access 106 and the electrical and mechanical zone 109, which extend along the interior as mentioned above. Associated with the electrical and mechanical zone 109 is a ventilation system that includes a network of air ducts for air exchange i.e. intake and exhaust. The network of air ducts are in communication with the atmosphere at a number of locations in the structure of the underwater premises 100, including the entrances and/or exits 101 at opposite ends thereof. Such locations may be situated above the surface of the body of water and/or below the surface of the surface of the body of water but with an underwater connection that extends to above the surface of the body of water.

[0051] As shown in Figure 9, utilities zones 114 are provided underneath the floor of the first level 110. Rooms at strategic locations in the first level 110 and amongst the commercial spaces 103 are assigned to become air-handling units 115 which form part of the ventilation system. On either side of the commercial spaces 103, there is at least one air-handling unit 115. The air-handling units 115 are interconnected by a series of ventilation ducts. Such ducts are connected to an exhaust air header and a fresh air header. Exhaust air is expelled to the ambient via the exhaust air header. Fresh air is taken from the ambient via the fresh air header. These facilities are provided on the third level 130 of the structure of the underwater premises 100, within or adjacent the electrical and mechanical zone 109 at intervals along length of the structure.

[0052] The means of egress or escape 105 is connected to the commercial spaces 103 and the main pedestrian aisle 104 via a number of ramps 107 at different locations. The means of egress or escape 105 is in connection with at least one of the entrances and/or exits 101 for evacuation of people to places of safety within a specific time-frame in case of emergency. The means of egress or escape 105 and the means of fire-fighting access 106 may comprise at least one pressurization air system to suppress the ingress of smoke to the means of egress or escape 105 and the means of fire-fighting access 106.

[0053] The pressurization air system includes a pressurization header. Air is kept under a pressure that is greater than atmospheric pressure to prevent smoke from getting into the means of egress or escape 105 within the interior of the structure of the underwater premises 100. It is noted that pressurization air system is not necessarily required, dependent on different regulatory requirements in different conditions.

[0054] The utilities zone 114 houses pipeworks to support the enjoyment and use by people whilst walking along the route 102 between the urban or sub-urban fabrics A, B and C. The pipeworks include at least some of

the following amenities: electricity and lighting systems, gas systems, water supply systems, drainage systems and supporting facilities.

[0055] In case of a fire at the main pedestrian aisle 104, smoke is extracted through an extraction system in the ceiling of the first level 110. The extraction system leads to a smoke extraction header on the third level 130. Fresh air enters from the ambient via the pressurization header for use in the means of egress or escape 105 and the means of fire-fighting access 106.

[0056] In case of a fire at one logistic zone 119, smoke is discharged through a duct connected to the logistic zone 119 by the smoke extraction header. Fresh air is taken from the ambient via the pressurization header for use in the means of egress or escape and the means of fire-fighting access 106. The pressure in the means of egress or escape 105 and the means of fire-fighting access 106 is discharged to the ambient via a pressure relief header at the third level 130.

[0057] It is noted that the means of egress or escape 105 and the means of fire-fighting access 106 are separated from the logistic zones 119 for safety reasons, such that they are reserved for rescue and escape in case of fire and are protected from fire and smoke from the logistic zones 119 where the risk of fire is relatively higher. In general, the means of egress or escape 105 and the means of fire-fighting access 106 are a place of safety, and hence they should be free of objects that can be burnt and/or obstructive and therefore only need pressurization to prevent ingress of smoke.

[0058] The invention has been given by way of example only, and various other modifications of and/or alterations to the described embodiment may be made by persons skilled in the art without departing from the scope of the invention as specified in the appended claims.

Claims

1. An underwater multi-facility hub constituting a pedestrian passage (100) including retail, commercial, entertainment, recreational and/or cultural facilities, for connecting at least first and second urban or sub-urban fabrics (A, B and C) separated by a body of water, comprising an enclosed structure located below the surface of said body of water and defining an interior of the structure, which interior includes a pedestrian walkway delineated by retail spaces (103) that are provided along an entire longitudinal extent of the interior and on opposite sides thereof to form two parallel rows of retail spaces, the structure having at least first and second entrances and/or exits (101) at different parts of the interior and permitting access between the pedestrian walkway and said at least first and second urban or sub-urban fabrics (A, B and C) respectively, wherein the pedestrian walkway extends across said at least first and second entrances and/or exits (101) via the interior

of the structure and providing access to the retail spaces (103) for enjoyment and use by people, such retail spaces providing shopping opportunity and a continuous shopping experience when the urban fabrics (A, B and C) include shopping centers, thereby creating a shopping hub which thereby encourages people to stay in; **characterized in that** the interior of the structure is compartmentalized in cross-section to provide divisions, the pedestrian walkway and the retail spaces are provided in a main division (110) of the divisions, means of egress (105) are provided with a first support division (120) of the divisions having a pedestrian passageway for people inside the interior to evacuate in the case of emergency, and a second support division (130) of the divisions includes means of fire-fighting access (106) which includes a vehicle passage that extends along the interior, each of the means of egress and means of fire-fighting access extending across the first and second entrances and/or exit.

2. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 1, wherein the structure is submerged and is located on or above the bottom of said body of water.
3. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 1, wherein the structure is buried in the bottom of said body of water.
4. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 1 to 3, wherein the divisions are storeys to provide one or more levels of spaces in the interior.
5. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 4, wherein the structure has at least three storeys to provide respective levels of spaces in the interior, the levels of spaces being in communication with one another and sharing each of said at least first and second entrances and/or exits at a respective part of the interior.
6. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 1 to 5, further including a ventilation system which extends across the first and second entrances and/or exits (101).

7. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 1, wherein said at least first and second entrances and/or exits (101) provide access to the means of egress or escape in the structure for evacuation to places of safety within specific time-frame in case of emergency. 5
8. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 7, wherein the means of egress or escape (105) includes subdivision of the interior of the structure into two or more fire compartments for preventing spread of fire. 10
9. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 1 to 8, wherein the means of fire-fighting access (106) is designated and protected to enable firefighting and effect rescue in case of fire. 20
10. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 9, wherein the means of fire-fighting access (106) comprises an adequate number of land access points predetermined by cross-sectional size of the interior of the structure. 25 30
11. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 10, wherein the land access points comprise at least one of said at least first and second entrances and/or exits (101). 35 40
12. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 1 to 11, wherein the means of fire-fighting access (106) is of a specific cross-sectional size to permit access by a customized firefighting vehicle. 45
13. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 1 to 12, wherein the interior of the structure includes one or more logistic zones (119) extending from at least one of said at least first and second entrances and/or exits (101) to said retail spaces for commercial entertainment, recreational and/or cultural facilities. 50 55
14. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 13, wherein the logistic zones (119) are separated from the means of egress or escape (105) and means of fire-fighting access (106).
15. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 6, wherein the ventilation system comprises a network of air ducts for air intake and exhaust.
16. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 15, wherein the network of air ducts is in communication with the atmosphere at a location in the structure, which is above the surface of said body of water or below the surface of said body of water with an underwater connection that extends to above the surface of said body of water.
17. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 15 or claim 16, wherein the means of egress or escape (105) and the means of fire-fighting access (106) comprise a pressurization air system which suppresses the ingress of smoke to the means of egress or escape (105) and the means of fire-fighting access (106).
18. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 15 to 17, further including a smoke extraction system to serve the retail, commercial, entertainment, recreation and/or cultural facilities.
19. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 1 to 18, wherein the structure has a wall that includes no window or at least one window (113) to enable viewing of underwater features from the interior, the said at least one window (113) whether or not being closable by a shield.
20. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 1 to 19, wherein the structure itself or the structure has extendable storey or storeys that can rise above water or submerge

into water to enable viewing of above-water and underwater features from the interior, the said at least one window (113) whether or not being closable by a shield.

21. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in any one of claims 1 to 20, including framework or facilities to support the enjoyment and use by people whilst walking along the at least one route from one of said at least first and second urban fabrics (A, B and C) to another of said first and second urban or sub-urban fabrics (A, B and C) or vice versa.
22. The underwater multi-facility hub constituting a pedestrian passage including retail, commercial, entertainment, recreational and/or cultural facilities as claimed in claim 21, wherein the framework or facilities comprises at least some of air conditioning system, electricity and lighting system, gas system, water supply system, drainage system and supporting facilities.

Patentansprüche

1. Unterwasser-Mehrzweck-Struktur, die eine Fußgängerpassage (100) mit Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen umfasst, um mindestens erste und zweite städtische oder vorstädtische Gebilde (A, B und C) zu verbinden, die durch ein Gewässer getrennt sind, umfassend eine geschlossene Struktur, die sich unterhalb der Oberfläche des Gewässers befindet und einen Innenraum der Struktur definiert, wobei der Innenraum einen Fußgängerweg umfasst, der Einzelhandelsflächen (103) aufweist, die entlang einer gesamten Längserstreckung des Innenraums und auf dessen gegenüberliegenden Seiten vorgesehen sind, um zwei parallele Reihen von Einzelhandelsflächen zu bilden, wobei die Struktur mindestens erste und zweite Eingänge und/oder Ausgänge (101) an verschiedenen Teilen des Innenraums aufweist und den Zugang zu dem Fußgängerweg und den mindestens ersten und zweiten städtischen oder vorstädtischen Gebilden (A, B und C) ermöglicht, wobei sich der Fußgängerweg über die mindestens ersten und zweiten Ein- und/oder Ausgänge (101) über den Innenraum der Struktur erstreckt und den Zugang zu den Einzelhandelsflächen (103) zum Amusement und zur Benutzung durch Personen bereitstellt, wobei die Einzelhandelsflächen, Einkaufsmöglichkeiten und ein kontinuierliches Einkaufserlebnis bieten, wenn die städtischen Gebilde (A, B und C) Einkaufszentren umfassen, wodurch ein Einkaufszent-

rum entsteht, das die Menschen zum Verweilen anregt;

dadurch gekennzeichnet, dass der Innenraum der Struktur im Querschnitt unterteilt ist, um Abteilungen bereitzustellen,

der Fußgängerweg und die Einzelhandelsflächen in einer Hauptabteilung (110) der Abteilungen vorgesehen sind, Mittel zum Ausgang (105) entsprechend einer ersten Versorgungsabteilung (120) für die Abteilungen vorgesehen sind, die einen Fußgängerdurchgang für Personen die sich im Innenraum befinden aufweist, um im Notfall evakuieren zu können, und eine zweite Versorgungsabteilung (130) für die Abteilungen Mittel zum Zugang zur Brandbekämpfung (106) umfasst, die eine Fahrzeugdurchfahrt umfasst, die sich entlang des Innenraums erstreckt, wobei sich alle Mittel zum Ausgang und alle Mittel zum Zugang zur Brandbekämpfung, über den ersten und zweiten Eingang und/oder Ausgang erstrecken.

2. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen nach Anspruch 1, wobei die Struktur eingetaucht ist und sich auf oder über dem Boden des Gewässers befindet.

3. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen nach Anspruch 1, wobei die Struktur im Boden des Gewässers vergraben ist.

4. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen nach einem der Ansprüche 1 bis 3, wobei die Abteilungen Stockwerke sind, um eine oder mehrere Ebenen von Räumen im Innenraum bereitzustellen.

5. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen nach Anspruch 4, wobei die Struktur mindestens drei Stockwerke aufweist, um entsprechende Ebenen von Räumen im Innenraum bereitzustellen, wobei die Ebenen von Räumen miteinander in Verbindung stehen und jeden der mindestens ersten und zweiten Eingänge und/oder Ausgänge an einem jeweiligen Teil des Innenraums gemeinsam teilen.

6. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen

- gen nach einem der Ansprüche 1 bis 5,
ferner umfassend ein Belüftungssystem, das sich
über die ersten und zweiten Ein- und/oder Ausgänge
(101) erstreckt.
7. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach Anspruch 1,
wobei die mindestens ersten und zweiten Eingänge
und/oder Ausgänge (101), den Zugang zu den Mit-
teln zum Ausgang oder zur Flucht in der Struktur
zum Evakuieren an sichere Orte, im Notfall innerhalb
eines bestimmten Zeitraumes ermöglichen.
8. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach Anspruch 7,
wobei die Mittel zum Ausgang oder zur Flucht (105)
eine Unterteilung des Innenraums der Struktur in
zwei oder mehr Brandabschnitte zum Verhindern
der Ausbreitung von Feuer umfassen.
9. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach einem der Ansprüche 1 bis 8,
wobei die Mittel zum Zugang zur Brandbekämpfung
(106) dafür ausgelegt und entsprechend geschützt
sind, um die Brandbekämpfung zu ermöglichen und
im Falle eines Brandes eine Rettung zu ermöglichen.
10. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach Anspruch 9,
wobei die Mittel zum Zugang zur Brandbekämpfung
(106) eine ausreichende Anzahl von Landzugangs-
punkten umfassen, die durch die Querschnittsgröße
des Inneraums der Struktur vorgegeben sind.
11. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach Anspruch 10,
wobei die Landzugangspunkte mindestens einen
der mindestens ersten und zweiten Ein- und/oder
Ausgänge (101) umfassen.
12. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach einem der Ansprüche 1 bis 11,
wobei die Mittel zum Zugang zur Brandbekämpfung
(106) von einer bestimmten Querschnittsgröße sind,
um den Zugang für ein angepasstes Feuerlöschfahr-
zeug zu ermöglichen.
13. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach einem der Ansprüche 1 bis 12,
wobei der Innenraum der Struktur eine oder mehrere
logistische Zonen (119) umfasst, die sich von min-
destens einem der mindestens ersten und zweiten
Ein- und/oder Ausgänge (101) zu den Einzelhan-
delsflächen für kommerzielle Unterhaltungs-, Frei-
zeit- und/oder Kultureinrichtungen erstrecken.
14. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach Anspruch 13,
wobei die logistischen Zonen (119) von den Mitteln
zum Ausgang oder zur Flucht (105) und den Mitteln
zum Zugang zur Brandbekämpfung (106) getrennt
sind.
15. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach Anspruch 6,
wobei das Belüftungssystem ein Netzwerk von Luft-
kanälen für den Lufteintritt und -austritt umfasst.
16. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach Anspruch 15,
wobei das Netzwerk von Luftkanälen in Verbindung
mit der Atmosphäre an einer Stelle in der Struktur
steht,
die sich über der Oberfläche des Gewässers oder
unter der Oberfläche des Gewässers befindet, mit
einer Unterwasserverbindung, die sich bis über die
Oberfläche des Gewässers erstreckt.
17. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach einem der Ansprüche 15 oder 16,
wobei die Mittel zum Ausgang oder zur Flucht (105)
und die Mittel zum Zugang zur Brandbekämpfung
(106) ein Druckluftsystem umfassen, das den Eintritt
von Rauch in die Mittel zum Ausgang oder zur Flucht
(105) und die Mittel zum Zugang zur Brandbekämp-
fung (106) verhindert.
18. Unterwasser-Mehrzweck-Struktur, mit einer
Fußgängerpassage, Einzelhandels-, Geschäfts-,
Unterhaltungs-, Freizeit- und/oder Kultureinrich-
tungen nach einem der Ansprüche 15 bis 17,
ferner umfassend ein Rauchabzugssystem zur Ver-
sorgung der Einzelhandels-, Geschäfts-, Unterhal-
tungs-, Freizeit- und/oder Kultureinrichtungen.

19. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen nach einem der Ansprüche 1 bis 18, wobei die Struktur eine Wand aufweist, die kein Fenster oder mindestens ein Fenster (113) umfasst, um die Betrachtung der Unterwasserlandschaft vom Innenraum aus zu ermöglichen, wobei das mindestens eine Fenster (113) durch eine Abschirmung verschließbar ist. 5 10
20. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen nach einem der Ansprüche 1 bis 19, wobei die Struktur selbst ein ausziehbares Stockwerk oder Stockwerke darstellt oder die Struktur ein ausziehbares Stockwerk oder Stockwerke umfasst, die über die Oberfläche des Gewässers steigen oder in das Gewässer eintauchen können, um die Betrachtung von Objekten oberhalb oder unterhalb der Oberfläche des Gewässers vom Innenraum aus zu ermöglichen, wobei das mindestens eine Fenster (113) durch eine Abschirmung verschließbar ist. 15 20
21. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen nach einem der Ansprüche 1 bis 20, umfassend einem Framework bzw. Einrichtungen zur Unterstützung des Amüsemments und der Benutzung durch Menschen, während ihres Entlangschreitens der mindestens einen Strecke von einem der mindestens ersten und zweiten städtischen Gebilde (A, B und C) zu einem anderen der ersten und zweiten städtischen oder vorstädtischen Gebilde (A, B und C) oder umgekehrt. 25 30 35
22. Unterwasser-Mehrzweck-Struktur, mit einer Fußgängerpassage, Einzelhandels-, Geschäfts-, Unterhaltungs-, Freizeit- und/oder Kultureinrichtungen nach Anspruch 21, in welcher das Framework bzw. die Einrichtungen mindestens eine Klimaanlage, ein Strom- und Beleuchtungssystem, ein Gas-system, ein Wasserversorgungssystem, ein Entwässerungssystem und Versorgungseinrichtungen umfassen. 40 45

Revendications

1. Un centre sous-marin multi-installations constituant un passage piétonnier (100) comprenant des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, pour relier au moins un premier et un deuxième structure urbaine ou suburbaine (A, B et C) séparés par un plan d'eau, 50 55

comprenant une structure fermée située sous la surface dudit plan d'eau et définissant un intérieur de la structure, lequel intérieur comprend une allée piétonne délimitée par des espaces commerciaux (103) qui sont prévus le long d'une étendue longitudinale entière de l'intérieur et sur les côtés opposés de celui-ci pour former deux rangées parallèles d'espaces commerciaux, la structure ayant au moins des première et deuxième entrées et/ou sorties (101) en différentes parties de l'intérieur et permettant l'accès entre l'allée piétonne et lesdits au moins première et deuxième structure urbaine ou suburbaine (A, B et C) respectivement, dans laquelle l'allée piétonne s'étend à travers lesdites au moins première et deuxième entrées et/ou sorties (101) via l'intérieur de la structure et donne accès aux espaces commerciaux (103) pour le plaisir et l'utilisation par les personnes, de tels espaces commerciaux offrant des possibilités de shopping et une expérience de shopping continu lorsque les structures urbaines (A, B et C) comprennent des centres commerciaux, créant ainsi un centre commercial qui encourage les personnes à y rester ; **caractérisé en ce que** l'intérieur de la structure est compartimenté en section transversale pour fournir des divisions, l'allée piétonne et les espaces commerciaux sont aménagés dans une division principale (110) des divisions, des moyens d'évacuation (105) sont munis d'une première division de support (120) des divisions ayant un passage pour piétons pour que les personnes à l'intérieur puissent évacuer de l'intérieur en cas d'urgence, et une deuxième division de support (130) des divisions comprend des moyens d'accès de lutte contre l'incendie (106) qui comprend un passage de véhicule qui s'étend le long d'intérieur, chacun des moyens d'évacuation et des moyens d'accès de lutte contre l'incendie s'étendant par les première et deuxième entrées et/ou sorties.

2. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon la revendication 1, dans laquelle la structure est submergée et est située sur ou au-dessus du fond de ladite plan d'eau. 50
3. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon la revendication 55

- 1,
dans laquelle la structure est enterrée dans le fond
dudit plan d'eau.
4. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon l'une quelconque
des revendications 1 à 3,
dans laquelle les divisions sont des étages pour four-
nir un ou plusieurs niveaux d'espaces à l'intérieur. 5
5. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon la revendication
4,
dans laquelle la structure a au moins trois étages
pour fournir des niveaux respectifs d'espaces à l'in-
térieur, les niveaux d'espaces étant en communica-
tion les uns avec les autres et partageant chacune
desdites au moins première et seconde entrées
et/ou sorties à une partie respective de l'intérieur. 10
6. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon l'une quelconque
des revendications 1 à 5,
comprenant en outre un système de ventilation qui
s'étend sur les première et deuxième entrées et/ou
sorties (101). 15
7. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon la revendication
1,
dans laquelle lesdites au moins première et deuxiè-
me entrées et/ou sorties (101) donnent accès aux
moyens d'évacuation ou de fuite dans la structure
pour l'évacuation vers des lieux de sécurité dans des
délais spécifiques en cas d'urgence. 20
8. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon la revendication
7,
dans laquelle les moyens d'évacuation ou de fuite
(105) comprennent la subdivision de l'intérieur de la
structure en deux ou plusieurs compartiments cou-
pe-feu pour empêcher la propagation du feu. 25
9. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon l'une quelconque 30
- des revendications 1 à 8,
dans laquelle les moyens d'accès de lutte contre l'in-
cendie (106) sont désignés et protégés pour permet-
tre la lutte contre l'incendie et effectuer le sauvetage
en cas d'incendie.
10. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon la revendication
9,
dans laquelle les moyens d'accès de lutte contre l'in-
cendie (106) comprennent un nombre adéquat de
points d'accès terrestres prédéterminés par la di-
mension de la section transversale de l'intérieur de
la structure. 35
11. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon la revendication
10,
dans laquelle les points d'accès terrestres compren-
nent au moins l'une desdites au moins première et
seconde entrées et/ou sorties (101). 40
12. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon l'une quelconque
des revendications 1 à 11,
dans laquelle les moyens d'accès de lutte contre l'in-
cendie (106) sont d'une taille de section transversale
spécifique pour permettre l'accès par un véhicule de
lutte contre l'incendie adapté. 45
13. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon l'une quelconque
des revendications 1 à 12,
dans laquelle l'intérieur de la structure comprend une
ou plusieurs zones logistiques (119) s'étendant de-
puis au moins l'une desdites au moins première et
deuxième entrées et/ou sorties (101) jusqu'auxdits
espaces commerciaux pour des installations com-
merciales de divertissement, récréatives et/ou cul-
turelles. 50
14. Centre sous-marin multi-installations constituant un
passage piétonnier, y compris des installations com-
merce de détail, commerciales, de divertissement,
récréatives et/ou culturelles, selon la revendication
13,
dans laquelle les zones logistiques (119) sont sépa-
rées des moyens d'évacuation ou de fuite (105) et
des moyens d'accès de lutte contre l'incendie (106). 55

15. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon la revendication 6, dans lequel le système de ventilation comprend un réseau de conduits d'air pour l'entrée et la sortie d'air. 5
16. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon la revendication 15, dans laquelle le réseau de conduits d'air est en communication avec l'atmosphère à un emplacement dans la structure, qui est au-dessus de la surface de ladite plan d'eau ou au-dessous de la surface de ladite plan d'eau avec une connexion sous-marine qui s'étend au-dessus de la surface de ladite plan d'eau. 10 20
17. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon la revendication 15 ou 16, dans laquelle les moyens d'évacuation ou de fuite (105) et les moyens d'accès de lutte contre l'incendie (106) comprennent un système à air comprimé qui supprime l'entrée de fumée dans les moyens d'évacuation ou de fuite (105) et les moyens d'accès de lutte contre l'incendie (106). 25 30
18. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon l'une quelconque des revendications 15 à 17, y compris un système d'extraction de la fumée pour desservir les installations commerces de détail, commerciales, de divertissement, récréatives et/ou culturelles. 35 40
19. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon l'une quelconque des revendications 1 à 18, dans laquelle la structure a une paroi qui ne comporte pas de fenêtre ou au moins une fenêtre (113) pour permettre la visualisation d'éléments sous-marins depuis l'intérieur, ladite au moins une fenêtre (113) pouvant être fermée par un écran. 45 50
20. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon l'une quelconque des revendications 1 à 19, dans laquelle la structure elle-même présente un ou plusieurs étages extensibles, ou la structure a un ou plusieurs étages extensibles, qui peuvent s'élever au-dessus du plan d'eau ou s'immerger dans le plan d'eau pour permettre la visualisation d'éléments au-dessus du plan d'eau et sous-marins depuis l'intérieur, ladite au moins une fenêtre (113) pouvant être fermée par un écran. 55
21. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles, selon l'une quelconque des revendications 1 à 20, comprenant un cadre ou des installations pour favoriser le plaisir et l'utilisation par les personnes lorsqu'elles marchent le long d'au moins un itinéraire allant de l'un desdits au moins premier et deuxième structure urbaine ou suburbaine (A, B et C) à un autre desdits premier et un deuxième structure urbaine ou suburbaine (A, B et C), ou vice versa.
22. Centre sous-marin multi-installations constituant un passage piétonnier, y compris des installations commerce de détail, commerciales, de divertissement, récréatives et/ou culturelles selon la revendication 21, dans laquelle le cadre ou les installations comprennent au moins une partie du système de climatisation, du système électrique et d'éclairage, du système de gaz, du système d'approvisionnement en eau, du système de drainage et des installations auxiliaires.

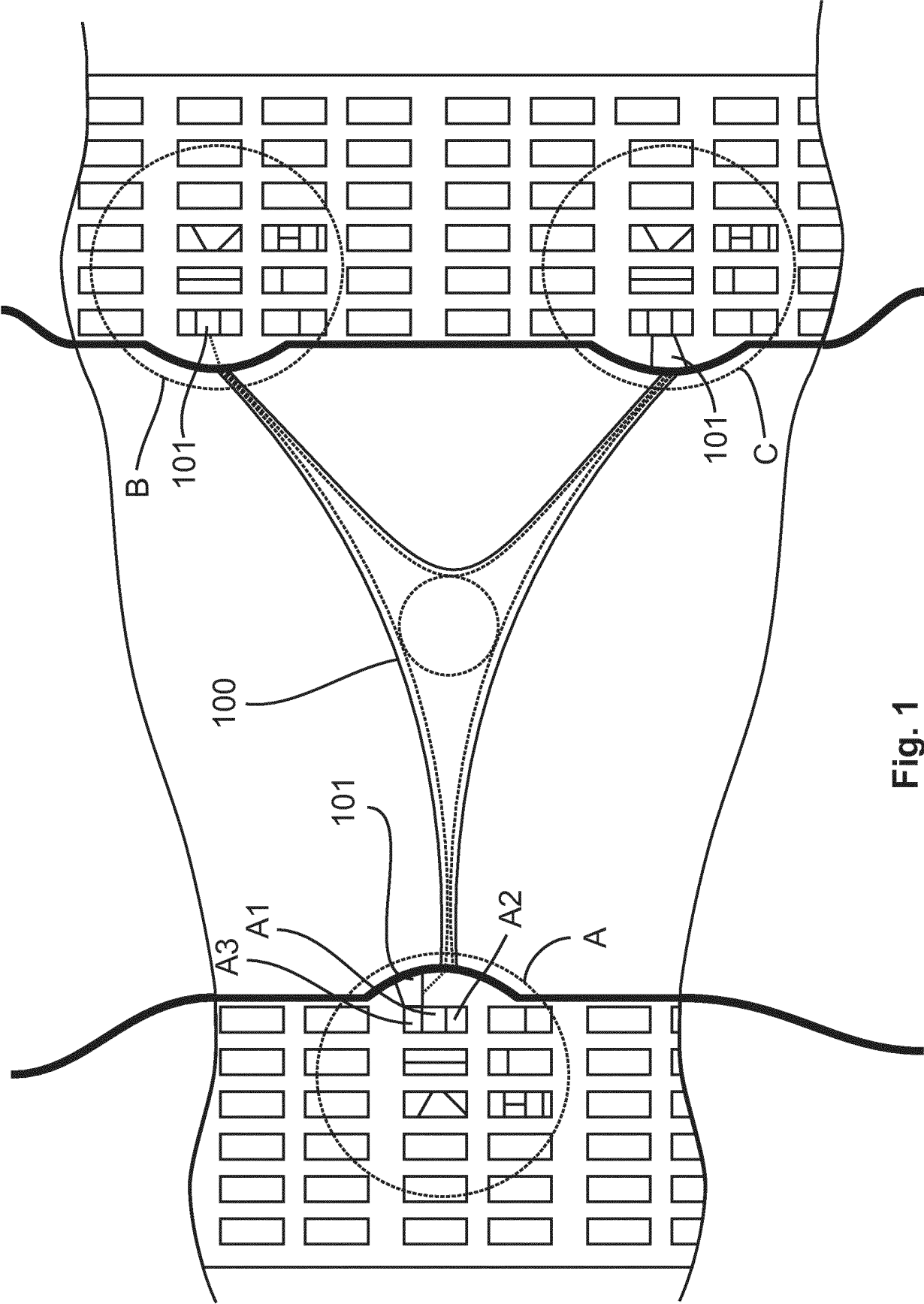


Fig. 1

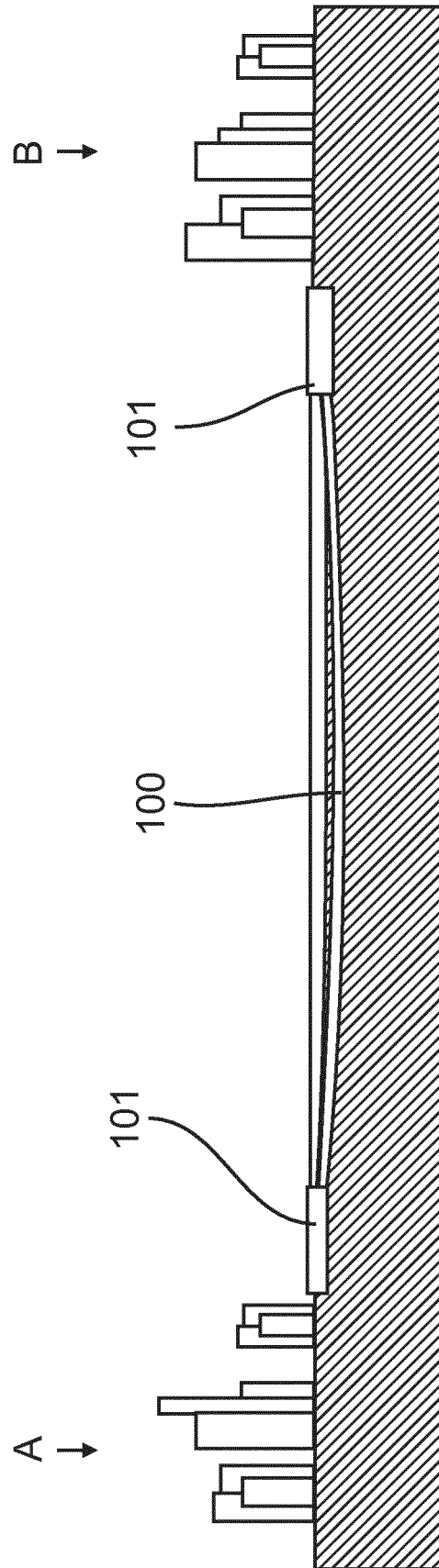


Fig. 2

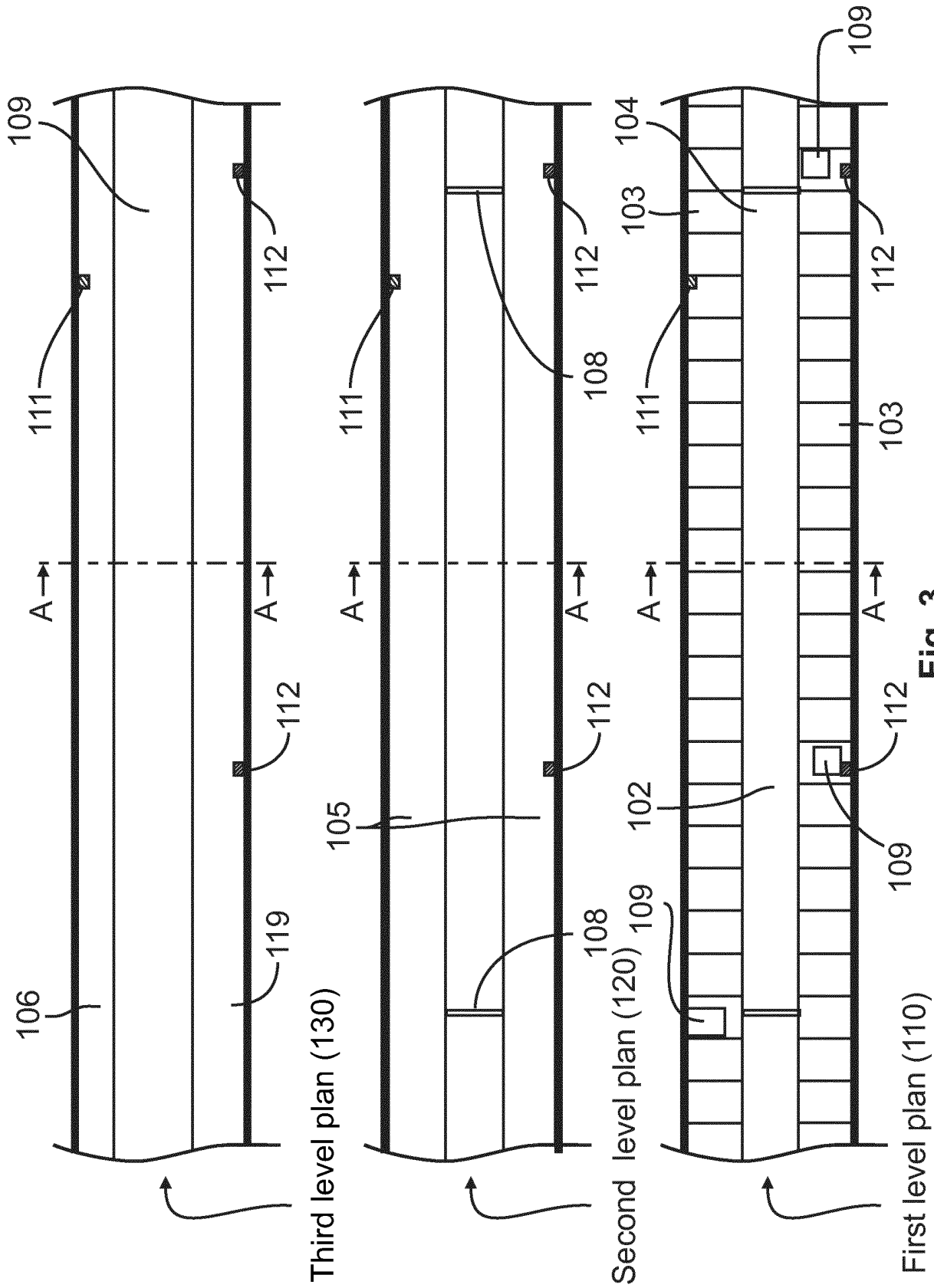


Fig. 3

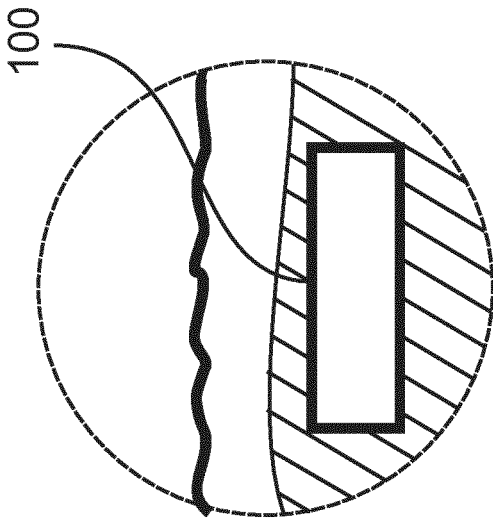
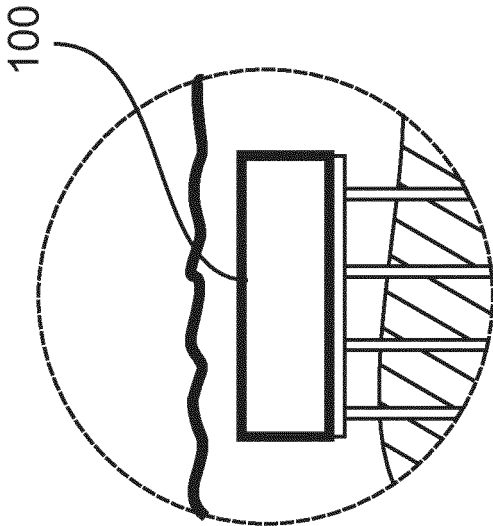
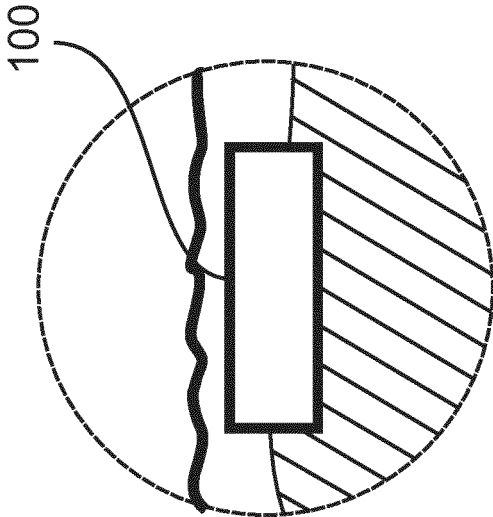


Fig. 4

Fig. 5

Fig. 6

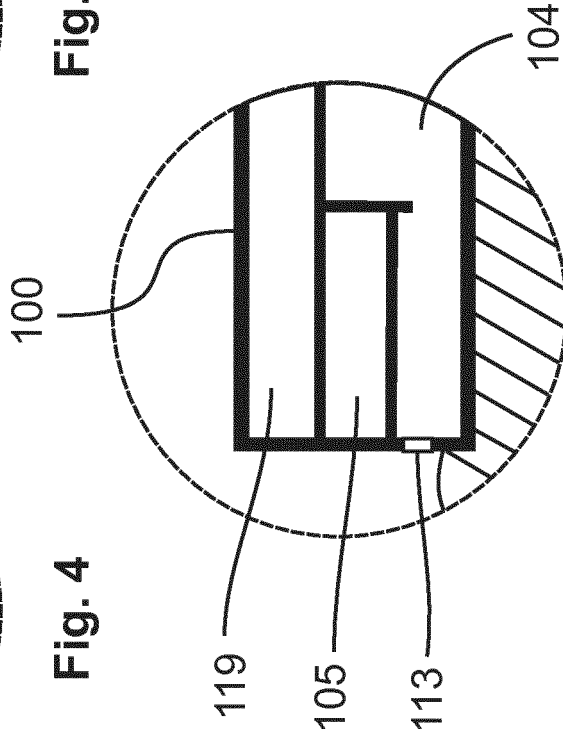


Fig. 7

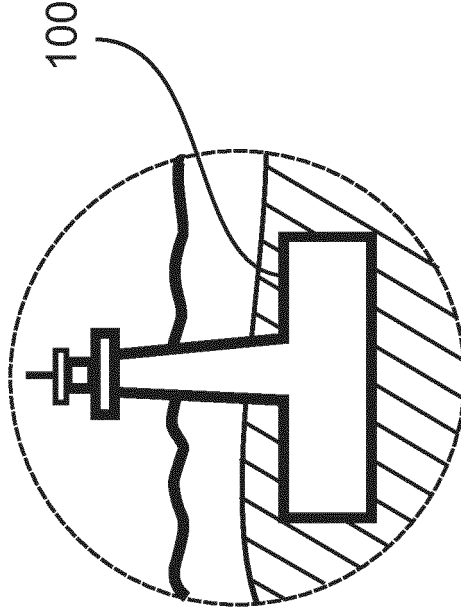
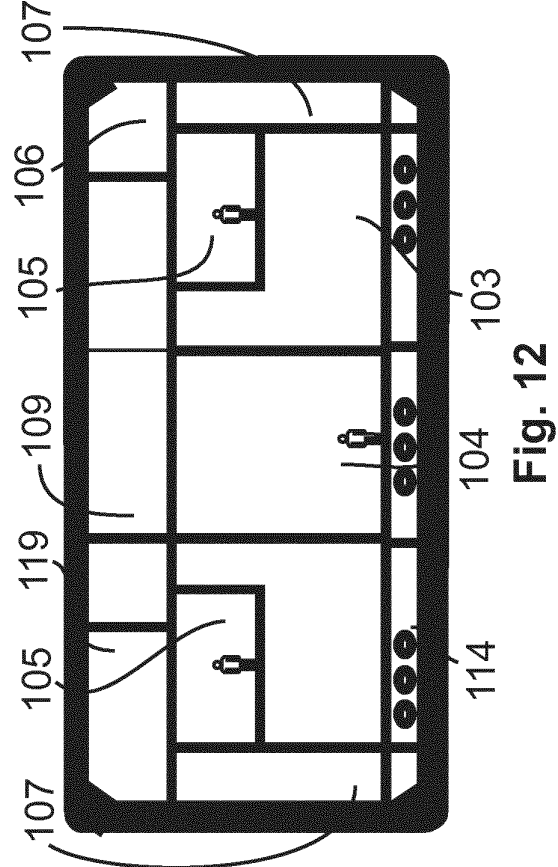
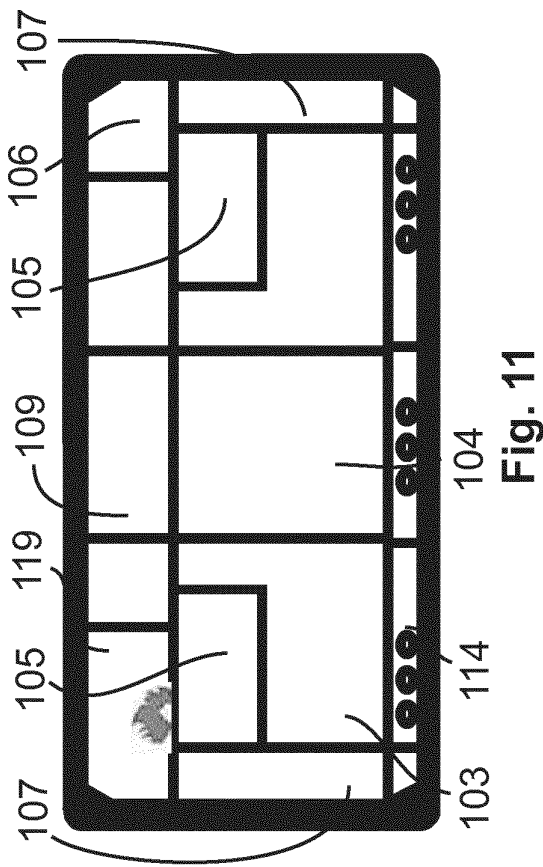
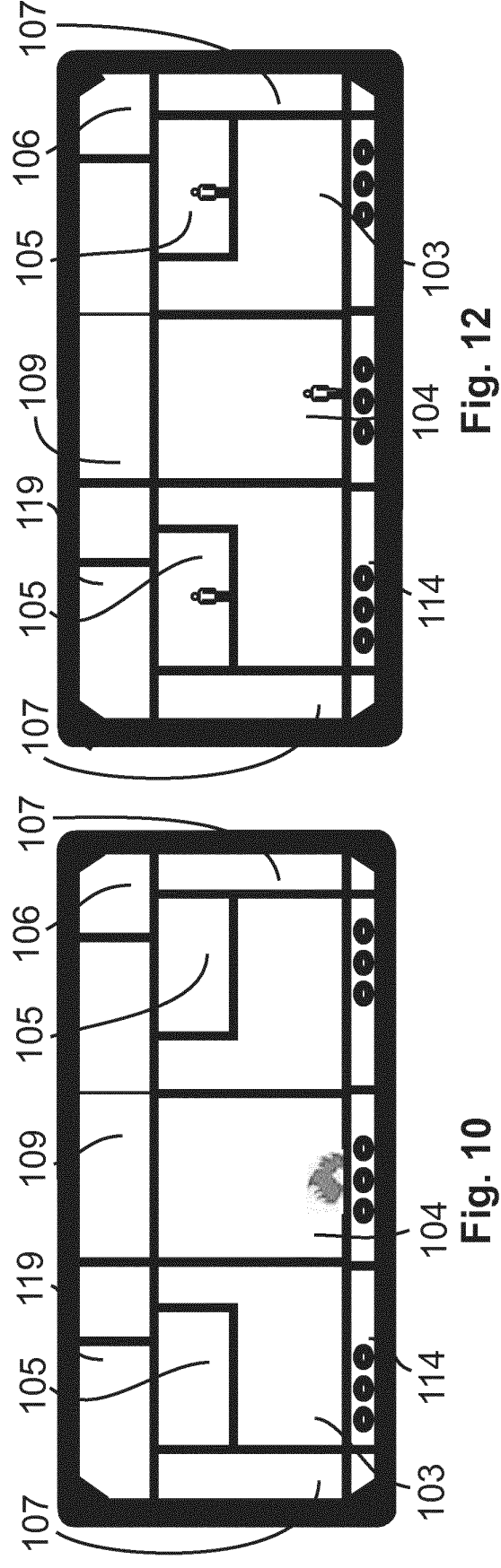
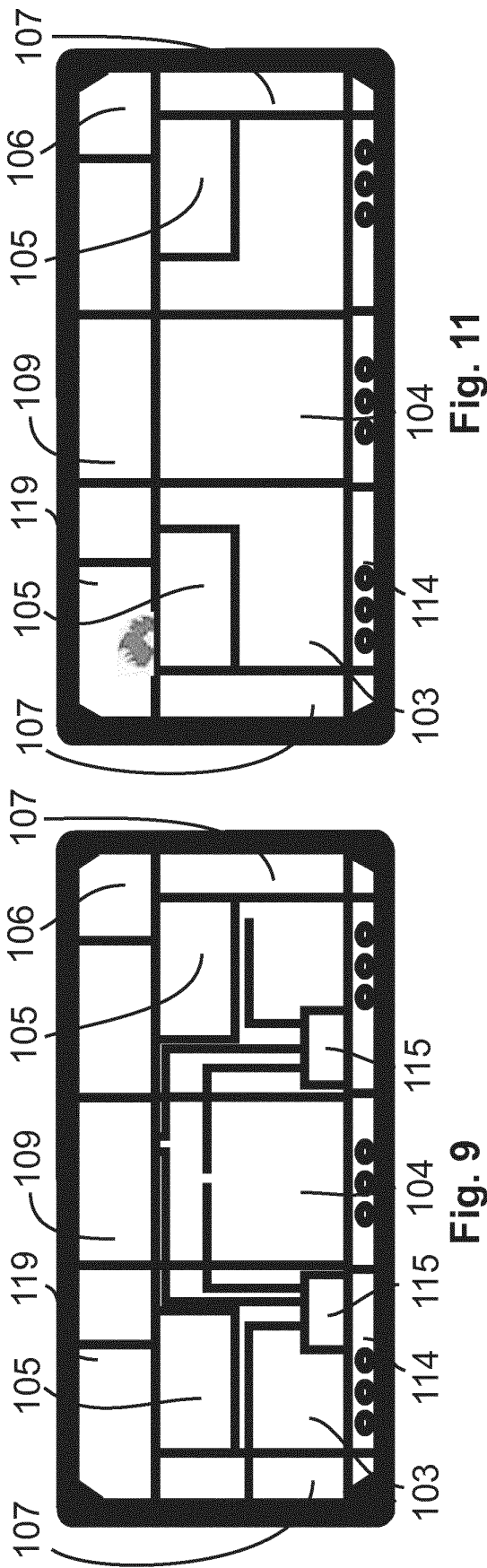


Fig. 8



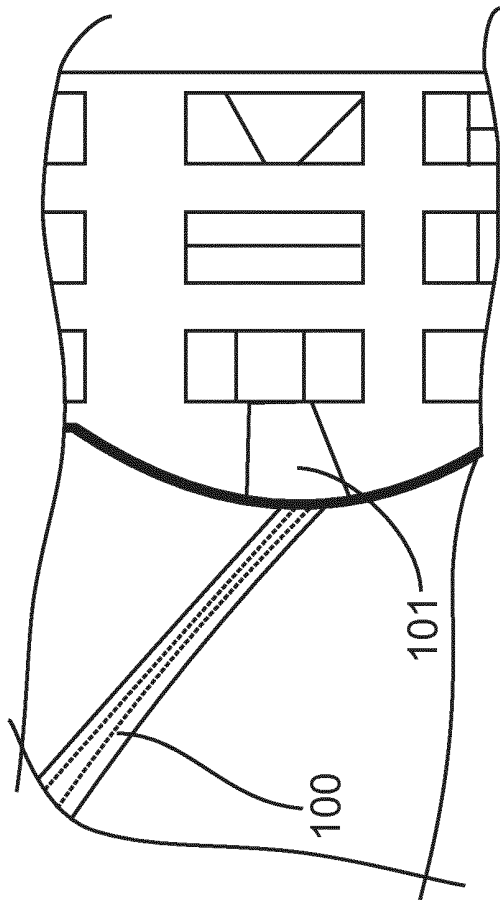


Fig. 13

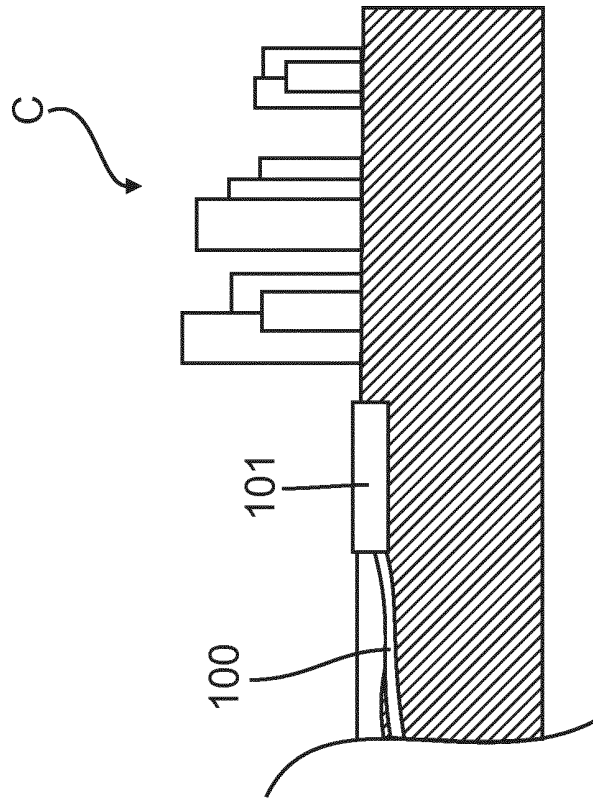


Fig. 14

REFERENCES CITED IN THE DESCRIPTION

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