

PCT INTERNATIONAL PATENT APPLICATION (DRAFT)

APPLICATION TITLE: MOBILE WOODEN ARTIFICIAL ISLAND BLUE CARBON CO₂ SEQUESTRATION SYSTEM

APPLICANT / INVENTOR: Yuji Hirota

INTERNATIONAL PATENT CLASSIFICATION (IPC): A01G 33/00

TECHNICAL FIELD

[0001] The present invention relates to a wooden artificial island configured to float or be deployed in marine environments, and a mobile blue carbon CO₂ sequestration system utilizing said artificial island for long-term cultivation of seaweed and stable sequestration and reduction of atmospheric and marine carbon dioxide (CO₂).

BACKGROUND ART

[0002] In recent years, attention has been focused on utilizing carbon absorbed and sequestered via marine ecosystems, seaweeds, and seagrasses (blue carbon) to prevent global warming and achieve carbon neutrality. In conventional CO₂ sequestration via natural growth, the sequestration effect was limited due to rapid decomposition by microorganisms and other organisms. Furthermore, when deploying large-scale seaweed cultivation facilities in marine environments, challenges arose regarding weather resistance, salt-damage resistance, construction costs, and environmental impact during removal.

SUMMARY OF THE INVENTION

Technical Problem

[0003] The present invention has been made in view of the above-mentioned problems. An object of the present invention is to provide a mobile wooden artificial island that exhibits superior salt-damage resistance and weather resistance to achieve long-term durability, precisely maintains water depth suitable for sea-surface height and photosynthesis, and efficiently conducts sinking and sequestration processes into the deep seabed.

Solution to Problem

[0004] In order to solve the above problems, a mobile wooden artificial island system according to an aspect of the present invention comprises: a wooden frame treated with a liquid glass coating; a plurality of sealed wooden boxes incorporated inside or underneath the wooden frame and equipped with hatches and pumps for depth adjustment by taking in and discharging seawater; a seaweed cultivation unit detachably held by the wooden frame or the sealed wooden boxes, including seaweed seedlings, culture soil, sheets, and fixing wooden frames; and an anti-fish net provided at a lower or side portion of the wooden frame or the sealed wooden boxes to prevent invasion and escape of organisms.

[0005] After seaweeds are grown in a first sea area having a water depth of 10 to 30 m while maintaining an installation depth at an optimal water depth of 5 to 10 m for seaweed growth by adjusting seawater volume via pumps of the sealed wooden boxes, the seaweed cultivation units or structures containing mature or withered seaweeds are moved to a second sea area having a water depth of 100 m or more, and the culture soil and seaweeds are cast into the deep seabed for long-term sequestration.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. 1 is a top plan view of a wooden artificial island (LUMBER structure), an enlarged top plan view of a unit module, and a structural cross-sectional view according to an embodiment of the present invention.

[0007] FIG. 2 is a conceptual flow diagram illustrating the steps of the blue carbon circulation process (LUMBER circulation process) utilizing the wooden artificial island of the present invention.

DETAILED DESCRIPTION & DRAWINGS

[0008] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings (FIG. 1 and FIG. 2). FIG. 1 shows the structure and structural components of a wooden artificial island (LUMBER: Large-scale Urban & Marine Blue carbon Ecosystem Restoration) according to an embodiment of the present invention.

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【 INSERT FIG. 1 HERE 】

(Structural and Conceptual Layout of Mobile Wooden Artificial Island)

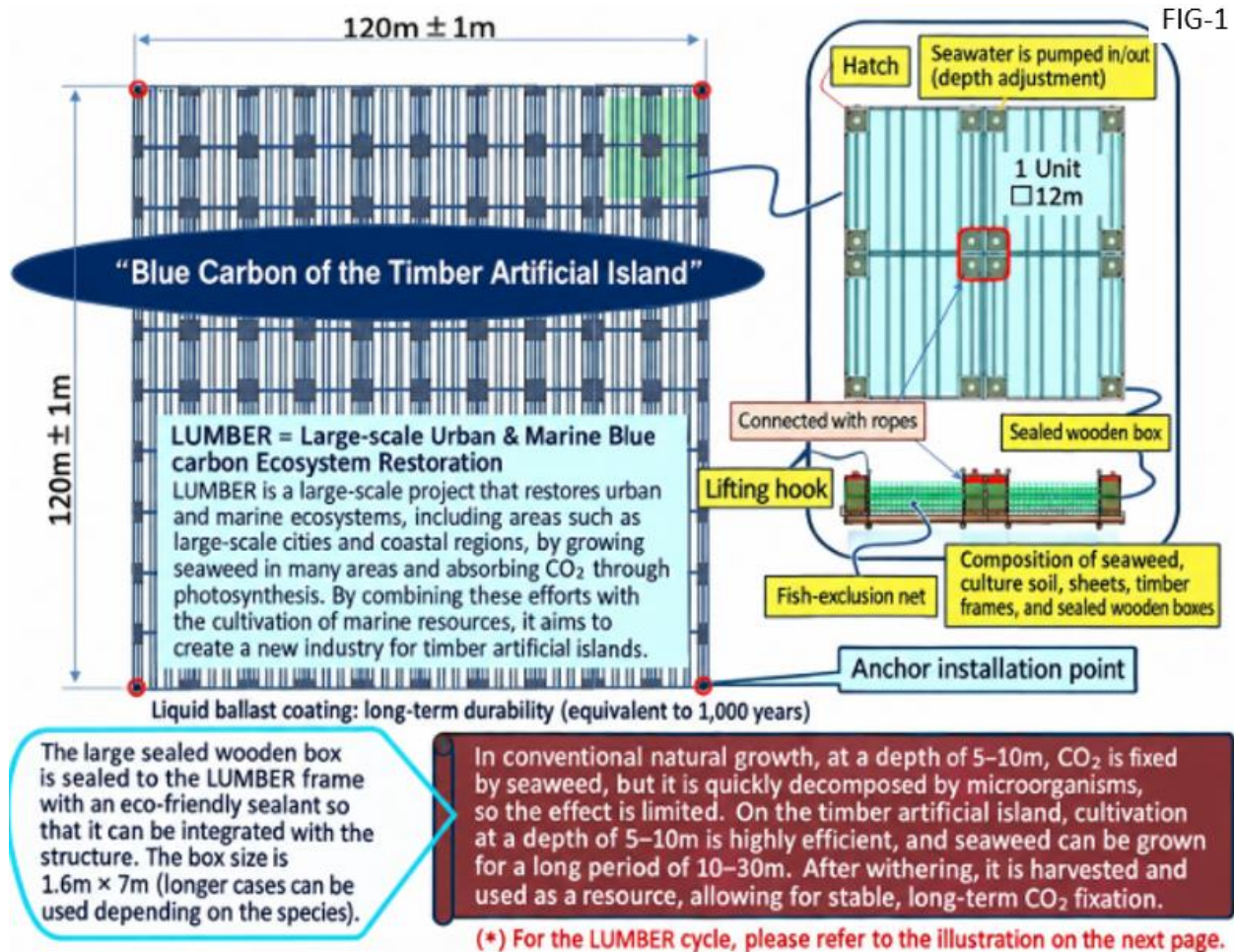


FIG. 1: Top plan view, unit module detail, and structural cross-sectional diagram of the mobile wooden artificial island (LUMBER structure) according to an embodiment of the present invention.

[0009] FIG. 2 illustrates the operational steps and marine relocation process of the blue carbon circulation process (LUMBER circulation process) using the wooden artificial island shown in FIG. 1.

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【 INSERT FIG. 2 HERE 】

(Conceptual Flow Diagram of LUMBER Blue Carbon Circulation Process)

IMAGE DIAGRAM OF LUMBER RECYCLING

FIG-2

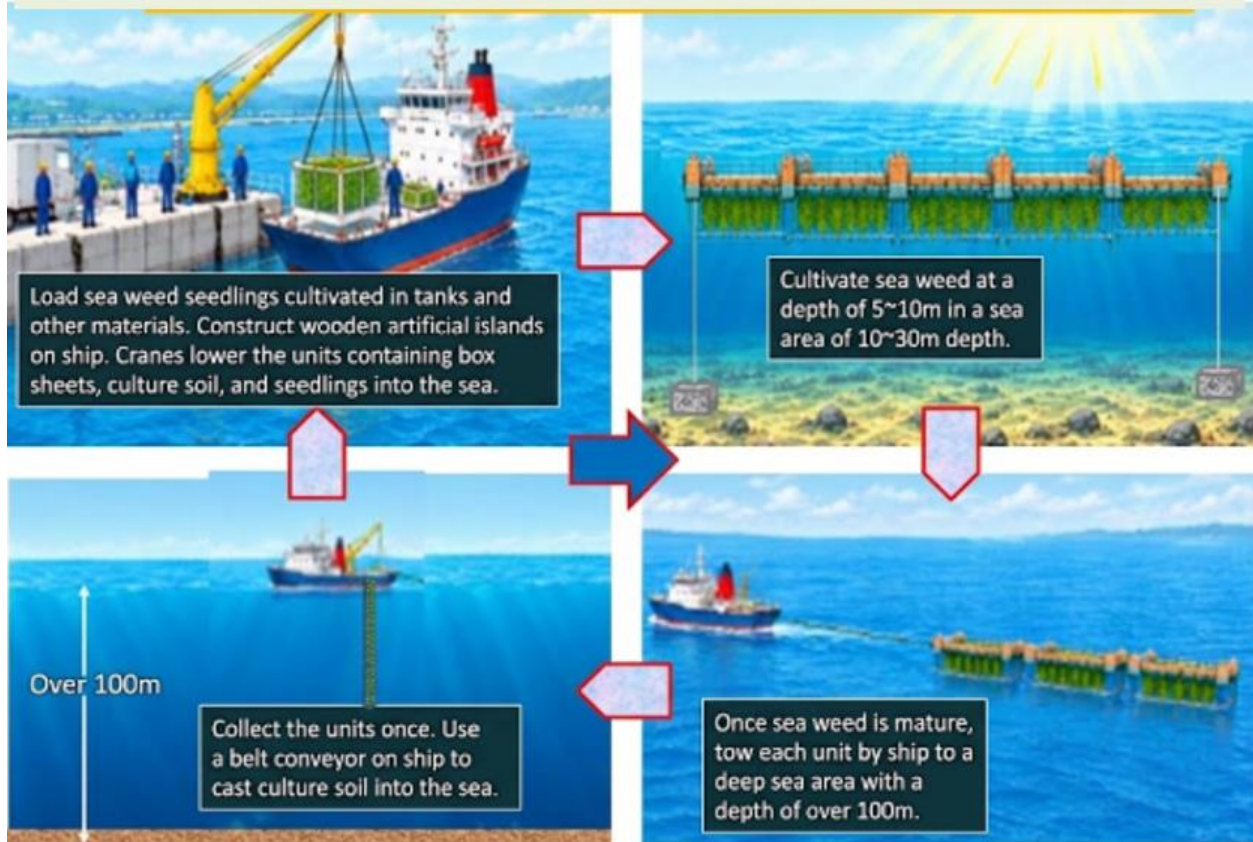


FIG. 2: Conceptual flow diagram illustrating the sequence of operational steps (Step 1 to Step 4) in the blue carbon circulation process across shallow and deep sea areas.

CLAIMS

1. A blue carbon CO₂ sequestration system utilizing a mobile wooden artificial island floating or deployed in marine environments, comprising:

- a wooden frame having a surface treated with a weather-resistant coating;
- a plurality of sealed wooden boxes arranged inside or under the wooden frame, having a ballast adjustment mechanism for controlling buoyancy and installation depth by taking in and discharging seawater;
- a seaweed cultivation unit holding seaweed and detachably connected to the wooden frame or the sealed wooden boxes; and
- an anti-fish net provided around or under the seaweed cultivation unit to prevent escape of cultivated target species and entry of external organisms,

wherein, in a first sea area, the installation depth is maintained by the ballast adjustment mechanism at a depth suitable for seaweed growth to proliferate seaweeds, and subsequently,

the seaweed cultivation unit or structure containing mature or withered seaweeds is relocated to a second sea area deeper than the first sea area, causing the seaweeds to sink to the deep seabed for long-term carbon sequestration.

PTS & LUMBER Related Materials & References

https://www.garden-field.com/_files/ugd/954e39_7be0eb8d1a5e4579b30a5d400be3419c.pdf