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(54) Title: A HYBRID AERIAL PUBLIC/MASS TRANSPORT SYSTEM

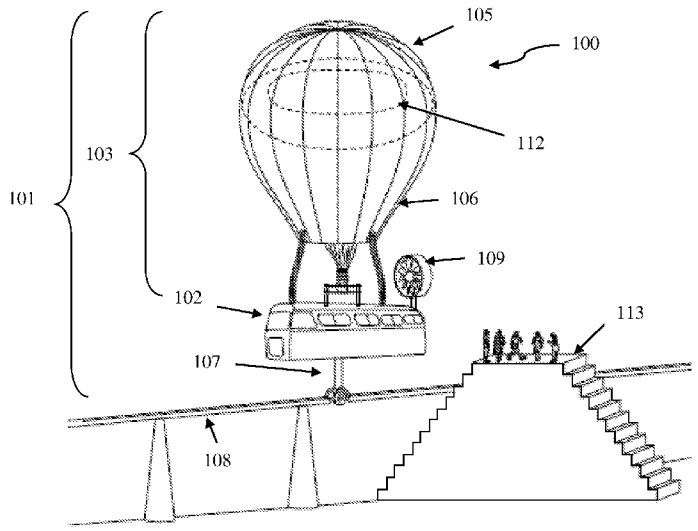

Figure 1

(57) Abstract: The present invention relates to a field of transport system and more particularly relates to system enabled to transport passengers by a hybrid balloon air-ship followed by guide-ways. The static enclosure may further comprise a gas lighter than air and may comprise ammonia. The static enclosure may further comprise a hydrogen capsule which will further provide an upward thrust. Furthermore, the dynamic enclosure may be a hot air balloon enclosure enabled to change the gas density in the enclosure by blowing hot air either by a hot air blower or by a gas burner. The system further comprises a plurality of thrusters which enable to create a horizontal lateral force to move the air ship in horizontal. The whole airship is guided with a tether and brake assembly to move from one point to other. The airship will allow passengers to travel from one point to another point via guideways.

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— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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— *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

TITLE OF INVENTION:
A HYBRID AERIAL PUBLIC/MASS TRANSPORT SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS AND PRIORITY

The present application claims priority from an Indian patent application number 201821006323 filed on 20th February 2018.

TECHNICAL FIELD

The present invention relates to a field of transport system and more particularly relates to system enabled to transport passengers/cargo by a hybrid balloon air-ship followed by guide-ways.

BACKGROUND

The subject matter discussed in the background section should not be assumed to be prior art merely as a result of its mention in the background section. Similarly, a problem mentioned in the background section or associated with the subject matter of the background section should not be assumed to have been previously recognized in the prior art. The subject matter in the background section merely represents different approaches, which in and of themselves may also correspond to implementations of the claimed technology.

The multiple transport system comprising the road transport, metros or rail transport and other seaway transport are falling short to provide proper transportation for the passengers are they are overcrowded all the time. Furthermore, such transport systems are resisted with many other individual and other transport vehicle.

The cost for the implementation is also very high as a lot of investment in required for constructing roadways comprising the highways, ghats and the like.

Establishment of metros too take a lot of investment as they either work on fly-overs or through underground tunnels.

Therefore, there is a need to establish a transport system with low resistance and further with low investment. Such problem can be solved via air balloons tied to specific rails and driven with some driving technologies. Many more research may be done in the construction of balloon so to implement in the proposed transport system.

Therefore, there is a long-standing need for a transport system enabled by a hybrid balloon enclosure.

SUMMARY

This summary is provided to introduce concepts related to method and system for generating call reports by automatic segregation of calls based on categories and the concepts are further described below in the detailed description. This summary is not intended to identify essential features of the claimed subject matter nor is it intended for use in determining or limiting the scope of the claimed subject matter.

In an embodiment, a system enabled to transport passengers and goods from an initial point to a final point, the system comprising an air ship comprising a carriage enabled to carry the passengers and goods. The airship further comprising a lifting unit comprising a hybrid enclosure comprising a static enclosure and a dynamic enclosure wherein the static enclosure is enabled to lift the dead weight of the air ship and the dynamic enclosure is enabled to control the lifting force depending upon the non-uniform load effected due to the passengers and goods. The airship further comprising a tether and brake assembly comprising a rope guide-way enabled to guide the air ship from the first point to a second point wherein a braking unit is enabled to stop the air-ship at pre-determined points. The airship further comprising a plurality of thrusters enabled to provide a

horizontal thrust to the air-ship wherein the horizontal thrust may enable the air ship to move forward and backward. The system further comprising an intelligent real time operating unit enabled to sense the pressure and load on the static enclosure and the dynamic enclosure via a pressure and a load sensor. The intelligent real time operating unit is further enabled to track the air-ship on Global Positioning system and send the co-ordinates to a central operations centre and on arriving at pre-determined intermediate points the breaking unit will stop the air ship. The intelligent real time operating unit is further enabled to sense the wind pressure and operate the thrusters at specific angles to balance the air ship and move the air ship in forward and backward directions. The system may further comprise a central operating unit enabled to receive a data from the intelligent real time operating unit and monitors the operation of cameras and sensors.

BRIEF DESCRIPTION OF DRAWINGS

The detailed description is described with reference to the accompanying Figures. In the Figures, the left-most digit(s) of a reference number identifies the Figure in which the reference number first appears. The same numbers are used throughout the drawings to refer like features and components.

Figure 1 illustrates a transport system with an air ship enabled to transport passengers between stations with an embodiment of the present subject matter.

DETAILED DESCRIPTION

The present invention relates to a field of transport system and more particularly relates to system enabled to transport passengers by a hybrid balloon air-ship followed by guide-ways.

The transport system discloses an air-ship which further comprises a hybrid balloon such that it has a static enclosure and a dynamic enclosure. The static may

further comprise a gas lighter than air and may comprise ammonia. The static enclosure may further comprise a hydrogen capsule which will further provide an upward thrust. Furthermore, the dynamic enclosure may be a hot air balloon enclosure enabled to change the gas density in the enclosure by blowing hot air either by a hot air blower or by a gas burner. Such assembly will enable the system to create a thrust and maintain the position of the air ship.

The system further comprises a plurality of thrusters which enable to create a horizontal lateral force to move the air ship in horizontal direction i.e. forward or backward. The whole airship is guided with a tether and brake assembly to move from one point to other.

Referring Figure 1, a transport system 100 with an air ship 101 enabled to transport ship from a station is illustrated in accordance with an embodiment of the current subject matter.

In an embodiment, the current system may be developed at a single digit fraction of what might cost today to build a new mass transit system such as metros. The maintenance may be equally easy and since the present disclosure is enabled to hover above the ground at no more than 100ft, it will be safe even in light storms and rain. The system 100 may not require any pre-built roads and will require plain continuous tethering which can be easily built over static poles and or existing strong structures in cities/or even outside.

The primary components of the system may comprise an air ship 101 further comprising a lifting unit 103, an intelligent Real-time Operating Unit (IOU) 110, a Central Operating Unit (COU) 111, a thruster 107, a carriage 102 wherein such air ship 101 will be driven through a tether and breaking assembly 107, a guide-way 108, passenger on-boarding 113, a maintenance and parking enclosures 114 (not shown in figures).

The lifting unit 103 may be enabled to carry the weight of the air-ship 100 and the assembled components and may be made up of hybrid composite material which will have 3 main components comprising a hybrid enclosure 104 comprising a

static enclosure 105 and a dynamic enclosure 106 wherein the static enclosure 105 is enabled to lift the dead weight of the air ship 101 and the dynamic enclosure 106 is enabled to control the lifting force depending upon the non-uniform load effected due to the passengers and goods. The three main components may further comprise

- Static enclosure (105) filled with Ammonia gas
- Static enclosure comprising a Hydrogen capsule 112
- Dynamic enclosure as a Hot Air enclosure 106

In an embodiment, the ammonia enclosure and the hydrogen capsule may form the static enclosure 105 and the hot air enclosure may be a dynamic enclosure 106. The ammonia enclosure may constitute the major portion of the lifting assembly and will comprise of 50 ± 10 % of the total volume of the lifting unit 103. It will contain ammonia.

The hydrogen capsule 112 will be made up of a composite material wherein such capsule will be surrounded by ammonia at all times and will comprise of 25 ± 10 % of the lifting unit. Such arrangement of covering of hydrogen capsule 112 by ammonia will provide added safety.

The hot air enclosure is the lateral lower part of the lifting unit 103 and will comprise of hot air which will be obtained by burning propane using propane burners. The hot air may constitute 25 ± 10 % of the lifting unit.

In another embodiment, ammonia and hydrogen filled enclosures will ensure the dead weight lift of the entire assembly. The hot air will dynamically change the burn rate and will account for passenger entry and exit changing weight ratios.

The Intelligent real - time Operating unit (IOU) 110 is enabled to control all individual components like Hot Air, Ammonia & Hydrogen enclosures and will have pressure and weight detection sensors and that will be sent to the IOU. The unit may also comprise a plurality of web cameras and a GPS unit to ensure real time tracking and all the captured information may be sent to a Central Operations

Center. The IOU 110 may decide the flame and burn ratio of the propane in the hot air enclosure which will be directly proportional to the real-time passenger weight in the carriage 102. The IOU 110 may further comprise sensors for wind pressure and direction and will move the motorized thrusters in the right direction so as to move the assembly forward or backward. The braking unit will be integrated part of the tethered rope and will be operated at pre-defined stops for the passengers to board and leave the carriage 102 wherein IOU 110 will process according to the defined stops and duration to brake and accelerate the motorized rotors.

The Central Operating Unit (COU) 111 is enabled to receive all data from all the lifting assemblies through their individual IOUs 110. The cameras, sensors, wind monitors along with speed of the air ship will be monitored centrally by the COU 111. Data will be stored and AI (Artificial Intelligence) will be enabled to improve efficiencies in the operation of the

In an embodiment, the thrusters 109 may comprise Internal Combustion engine driven rotors to impart forward thrust to the entire ship. Since the frictional losses will be less owing to inherent buoyancy of the structure, the thrusters 109 will require relatively less power to create the forward thrust. The thrusters 109 will also provide the forward direction of movement and will be integrated with IOU's 110 in real-time. The Approx. weight will be 900 kg. In another embodiment, the thrusters 109 may also be electrically driven by electric motors further comprising DC motors, brushless DC motors or motor which can deliver enough power and speed to provide thrust through the thrusters.

In an exemplary embodiment, the electrically driven motors for the thrusters 109 may be supplied with power from solar energy apart from the conventional sources. The air ship may comprise a solar panel assembly to obtain the solar energy and store in the form of electrical energy in storage batteries.

The carriage 102 will be the place wherein passengers will be sitting / standing within the entire ship. The carbon fiber structure will be light weight and strong

enough to carry weight of the passengers and goods. It will also have inflatable air slides or staircases to disembark the passengers in case of breakdowns. In one of the embodiment of the present subject matter, the average dimensions of the carriage would be 25ft * 15Ft * 10 ft and may weigh approx. 500 kg. Maximum passenger weight carried will be around that of 50 passengers totaling around 3500 KG.

The Tether and Braking unit 107 will enable the entire air ship along with carriage 102 to tether to strong steel ropes which will act as guide-way 108 for the ecosystem. The tether will house the braking unit to ensure pre-determined stops at places of passenger entry and exit points. Approx. tether weight will be around 200KG. In an embodiment, the system may be equipped with one more tether assembly and further the braking is within the tether slide over the guideway.

The guide-way 104 may comprise of two static components further comprising a strong pillars / rigid structures which will hold the guide-way 104 by steel rope. The actual steel rope which has the unique design to allow the tether to freely go over it and it will be strong enough to handle the lateral weight shifts. The pillars will be around 70 to 80 ft in height and with the ability to withstand lateral forces of 8000Nm.

The Passenger On-boarding 113 may comprise platform like elevated stands around 70 ft with escalators and may be built to take the passengers to the carriage for boarding and getting down. A plurality of Automated ticketing units may be placed at the elevator entry points.

The Central Operating Unit (COU) 111 & Ware house will be storing the entire airships along with everything on night basis and will be checked daily for all required parameters. The COU 111 may have all the data from various ships in real time and required maintenance will be carried out at ware houses. Such COU 111 and ware houses will be located at starting/ and or end points of the entire journey of the airship.

In an embodiment, the present air-ship 101 may not need any operator as it may be controlled by the combination of Intelligent real - time Operating unit (IOU) 110 and the Central Operating Unit (COU) 111. With the help of data obtained from the both the units, the airship may be controlled automatically without the need of any operator.

Although implementations for a transport system with an air ship enabled to transport passengers between stations. have been described in language specific to structural features and/or methods, it is to be understood that the appended claims are not necessarily limited to the specific features or methods described. Rather, the specific features and methods are disclosed as examples of implementations for a transport system with an air ship enabled to transport passengers between stations.

We Claim:

1. A system 100 enabled to transport passengers and goods from an initial point to a final point, the system comprising:

an air ship 101 comprising:

a carriage 102 enabled to carry the passengers and goods;

a lifting unit 103 comprising a hybrid enclosure 104 comprising a static enclosure 105 and a dynamic enclosure 106 wherein the static enclosure 105 is enabled to lift the dead weight of the air ship 101 and the dynamic enclosure 106 is enabled to control the lifting force depending upon the non-uniform load effected due to the passengers and goods;

a tether and brake assembly 107 comprising a rope guide-way 108 enabled to guide the air ship 101 from the first point to a second point wherein a braking unit is enabled to stop the air-ship 101 at pre-determined points;

a plurality of thrusters 109 enabled to provide a horizontal thrust to the air-ship wherein the horizontal thrust may enable the air ship 101 to move forward and backward;

an intelligent real time operating unit 110 enabled to:

sense the pressure and load on the static enclosure and the dynamic enclosure via a pressure and a load sensor;

track the air-ship on Global Positioning system and send the co-ordinates to a central operations centre and on arriving at pre-determined intermediate points the breaking unit will stop the air ship;

sense the wind pressure and operate the thrusters at specific angles to balance the air ship and move the air ship in forward and backward directions;

a central operating unit 111 enabled to receive a data from the intelligent real time operating unit 110 and monitors the operation of cameras and sensors.

2. The system 100 of claim 1, wherein the static enclosure 105 is filled with ammonia gas and further comprises a hydrogen capsule 112 which is positioned inside the ammonia enclosure to provide safety.

3. The system 100 of claim 1, wherein the ammonia enclosure constitutes 50 ± 10 % of the total lifting unit and hydrogen capsule constitutes 25 ± 10 % of the total lifting unit.

4. The system 100 of claim 1, wherein the dynamic enclosure 106 is a hot air balloon enclosure wherein the burn rate of fuel is dynamically changed according to the varying rate of passenger and goods at different points.

5. The system 100 of claim 1, wherein the fuel used for operating the hot air balloon is propane.

6. The system 100 of claim 1, wherein the thrusters 109 are fans with aerodynamics blades to generate thrust and are powered by motors either driven electrically or by internal combustion engines.

7. The system 100 of claim 1, wherein the carriage 102 is a carbon fibre structure and has inflatable air slides to disembark the passengers in case of breakdowns.

8. The system 100 of claim 1, wherein the guideway 108 comprise steel ropes intermittently supported by pillars or rigid structures.

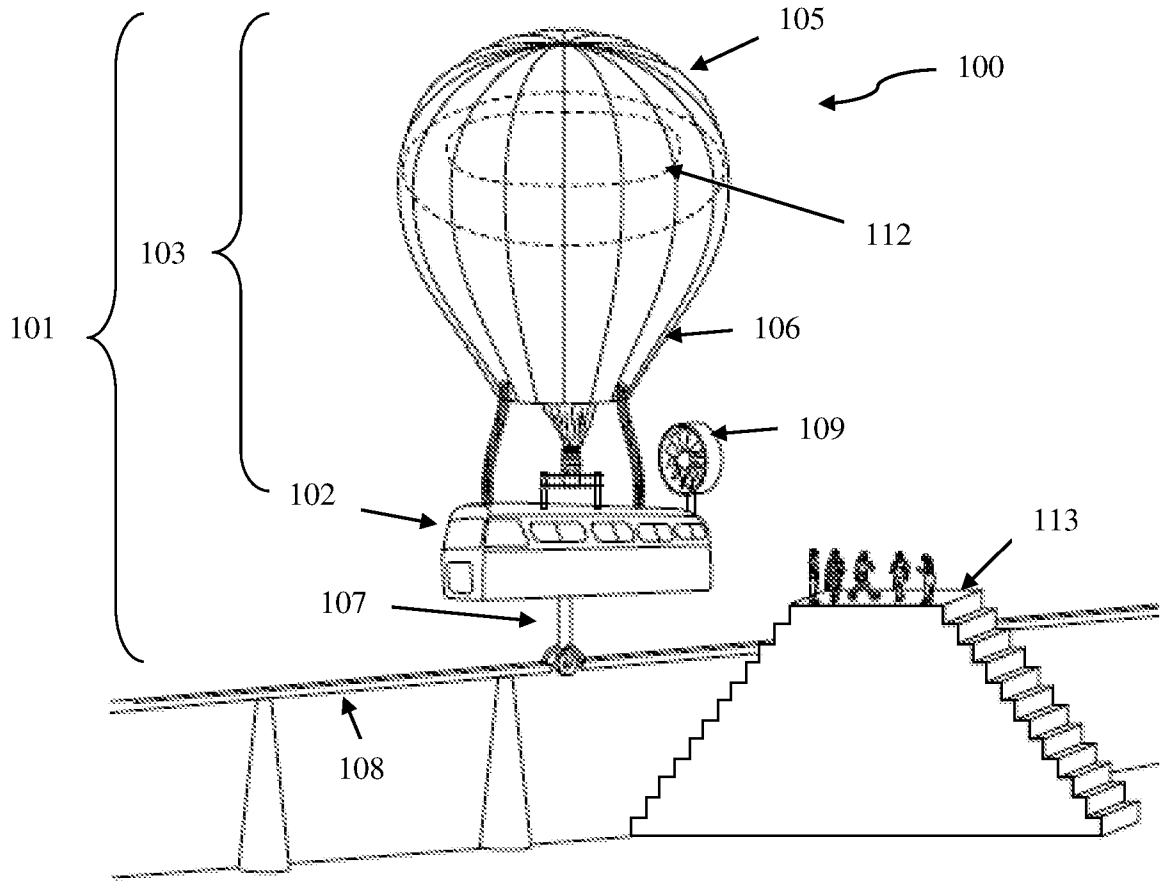

Figure 1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2018/054659

A. CLASSIFICATION OF SUBJECT MATTER
B64B1/58,B64B1/66 Version=2019.01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B64B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

TotalPatent One, IPO Internal Database

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US5431359 A (LOCKHEED MARTIN CORPORATION) 11 JULY 1995 (11-07-1995) Col. 6 line 50-51; Col. 6 line 57-60; Col. 6 line 24-26; Col. 6 line 23	1-8
Y	FR2326326 A1 (MARSOLLE JEAN) 29 April 1977 (29-04-1977) abstract; Page 1 line 10-15;	1-8
Y	US20090152391 A1 (BRUCE KIMBERLY CWHIRK) 18 June 2009 (18-06-2009) Para [0271] [0133] [0076] [0083]	1-8
Y	US8899514 B2 (GOELET JOHN, LTA CORPORATION) 02 December 2014 (02-12-2014) Claim 1	1-8

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"P" document published prior to the international filing date but later than the priority date claimed
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Citation	Pub.Date	Family	Pub.Date
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