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(54) Title: DRIVE ARRANGEMENT

(57) Abstract: According to an exemplary embodiment of the invention, an intelligent pod 100 for a drone 102 is disclosed. The intelligent pod 300 for a drone 102 may comprise of a base station 104. According to an embodiment, the intelligent pod 100 may further comprise of an arrangement for identifying a technical defect in the drone 102. The technical defect may be either a physical defect or a software defect. The intelligent pod 100 may include a sensor 110 to detect the presence of the drone 100 when the drone 100 is in proximity to the intelligent pod 100. The intelligent pod 100 may further include features such as wireless charging 112 and wireless data transmission 114 to the drone 102 when the drone 102 is in proximity to the intelligent pod 100. The main objective of the present invention is to ensure drone 102 safety before every flight and performing routine activities with minimum human intervention.
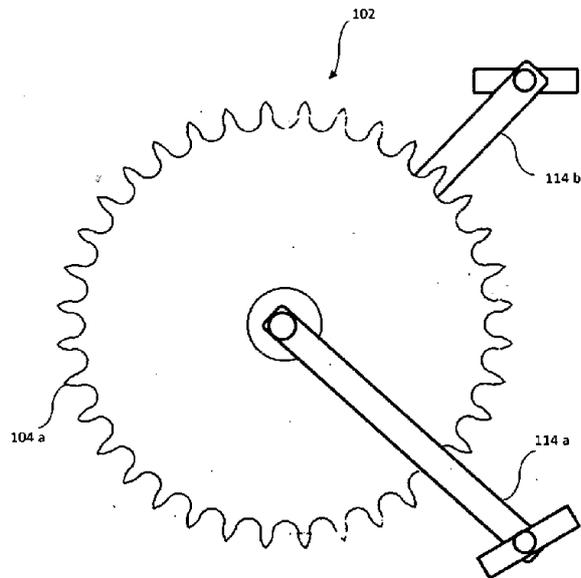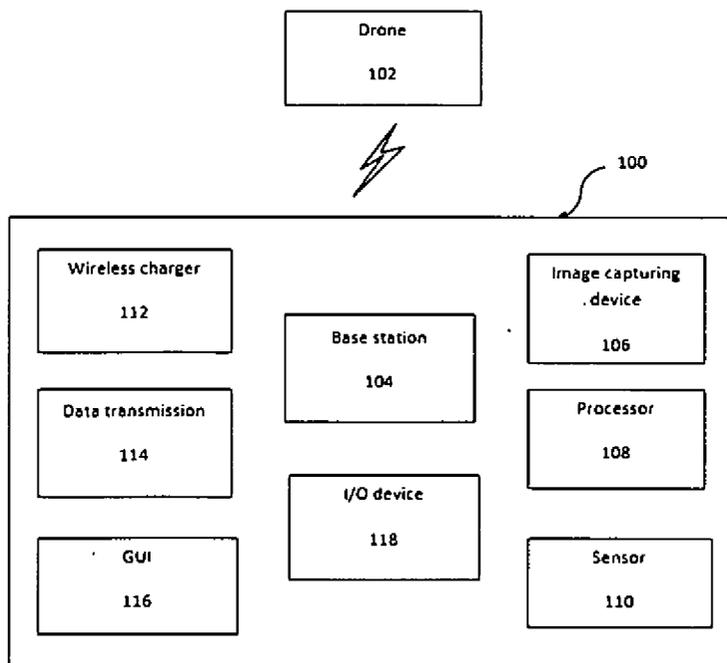
Figure 1

ABSTRACT

Intelligent pod for a drone

According to an exemplary embodiment of the invention, an intelligent pod 100 for a drone 102 is disclosed. The intelligent pod 100 for a drone 102 may comprise of a base station 104. According to an embodiment, the intelligent pod 100 may further comprise of an arrangement for identifying a technical defect in the drone 102. The technical defect may be either a physical defect or a software defect. The intelligent pod 100 may include a sensor 110 to detect the presence of the drone 100 when the drone 100 is in proximity to the intelligent pod 100. The intelligent pod 100 may further include features such as wireless charging 112 and wireless data transmission 114 to the drone 102 when the drone 102 is in proximity to the intelligent pod 100. The main objective of the present invention is to ensure drone 102 safety before every flight and performing routine activities with minimum human intervention.

28-Mar-2018/24170/201741010961/Abstract

We claim:

1. An intelligent pod 100 for a drone 102 comprising:

    a base station 104; and

    an arrangement for identifying a technical defect in the drone 102.

2. The intelligent pod 100 for a drone 102 as claimed in claim 1, wherein the arrangement includes at least one image capturing device 106 and a processor 108.

3. The intelligent pod 100 for a drone 102 as claimed in claim 1, wherein the technical defect includes a physical defect or a software defect.

4. The intelligent pod 100 for a drone 102 as claimed in claim 1, wherein the intelligent pod 100 further comprises of a sensor 110 to detect the presence of the drone 102.

5. The intelligent pod 100 for a drone 102 as claimed in claim 1, wherein the intelligent pod 100 wirelessly charges 112 the drone 102.

6. The intelligent pod 100 for a drone 102 as claimed in claim 5, wherein the drone 102 battery charging is initiated when the drone 102 is in proximity to the intelligent pod 100.

7. The intelligent pod 100 for a drone 102 as claimed in claim 1, wherein the drone 102 wirelessly shares information 114 with the intelligent pod 100.

8. The intelligent pod 100 for a drone 102 as claimed in claim 7, wherein the information sharing between the drone 102 and the intelligent pod 100 is initiated when the drone 102 is in proximity to the intelligent pod 100.

9. The intelligent pod 100 for a drone 102 as claimed in claim 1, wherein the intelligent pod 100 further comprises of a graphical user interface (GUI) 116.

10. The intelligent pod 100 for a drone 102 as claimed in claim 1, wherein the intelligent pod 100 further comprises of an I/O device to perform input and output operations in the intelligent pod 100.

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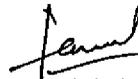
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FIELD OF INVENTION

The invention generally relates to a field of unmanned aerial vehicle and more particularly to an intelligent pod for an unmanned aerial vehicle.

BACKGROUND

An unmanned aerial vehicle (UAV), commonly known as a drone is an aircraft without a human pilot aboard. There are different kinds of drones based on the number of propellers such as a Tricopter, Quadcopter, Hexacopter, and an Octocopter. Similarly, the drones may be further categorized based on the additional features inbuilt in to the drone such as a camera, GPS, FPV etc. An unmanned aerial vehicle can be either a remote controlled aircraft flown by a pilot at a ground or can fly autonomously based on pre-programmed flight plans or more complex dynamic automation systems. In the past, UAVs were simple remote piloted aircraft, but autonomous control is increasingly being employed. During use, a UAV may need to take off and land at a designated location. Such designated locations may be a base station or a landing pad. Unmanned aerial vehicles (UAVs) may need to land in order to perform routine maintenance, charge on-board energy storage devices, swap on-board energy storage devices, and/or data transfer. The performing of above mentioned activities may usually require human intervention in the processes. Such human intervention is unacceptable in many existing or planned operating environments where long term autonomous capabilities are desired. In addition to the above, there is a need to detect deformity in the drone structure after a flight to ensure safety for next flight. The challenge here lies in performing a check on the unmanned aerial vehicle's body and components and also manage unmanned aerial vehicle operations

Hence there is a need for an intelligent pod that can check the hardware and software of the drone besides performing other functions for proper functioning of the drone.

SUMMARY OF THE INVENTION

According to an exemplary embodiment of the invention, an intelligent pod for a drone is disclosed. The intelligent pod for a drone may comprise of a base station. The base station may be a landing pad for the drone. The base station may further be a docking station for the drone. The drone may rest on the base station before and after the flight. According to an embodiment, the intelligent pod may further comprise of an arrangement for identifying a technical defect in the drone. The technical defect may be either a physical defect or a software defect. The intelligent pod may scan the drone for any physical defect caused during its flight to ensure drone safety for the next flight. The intelligent pod may further detect any software defect in the drone. According to an embodiment, the intelligent pod may include a sensor to detect the presence of the drone when the drone is in proximity to the intelligent pod. The intelligent pod may comprise of features such as wireless charging and wireless data transmission to the drone when the drone is in proximity to the intelligent pod. According to an embodiment, the main objective of the present invention is to ensure drone safety before every flight and performing routine activities with minimum human intervention.

BRIEF DESCRIPTION OF DRAWINGS

Other objects, features, and advantages of the invention will be apparent from the following

PATE description when read with reference to the accompanying drawing. 1 5   0 7

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Figure 1 illustrates a schematic diagram of an intelligent pod for a drone according to an exemplary embodiment of the invention.

DETAILED DESCRIPTION OF DRAWINGS

The following description with reference to the accompanying drawing is provided to assist in a comprehensive understanding of exemplary embodiments. It includes various specific details to assist in that understanding but these are to be regarded as merely exemplary. Accordingly, those of ordinary skill in the art will recognize that various changes and modifications of the embodiments described herein can be made without departing from the scope and spirit of the invention. In addition, descriptions of well-known functions and constructions are omitted for clarity and conciseness.

Figure 1 illustrates a schematic diagram of an intelligent pod 100 for a drone 102 according to an exemplary embodiment of the invention. The intelligent pod 100 for a drone 102 may comprise of a base station 104. According to an embodiment, the base station 104 may be a flat landing pad for the drone 102. The drone 102 may rest on the base station 104 before a flight and after the flight. According to an embodiment, the base station 104 may include a mark or an LED arrangement. The mark or the LED arrangement may indicate the landing area for the drone 102 on the base station 104.

According to an embodiment, the intelligent pod 100 may include an open base station 104. According to another embodiment, the intelligent pod 100 may include a covered base station 104. The covered type of base station 104 may enclose the base station 104 once the drone 102

lands on the base station 104. The covered type of base station 104 may protect the drone 102 from external particles such as dust, smoke, moisture etc. According to yet another embodiment, the base station 104 may be convertible into a portable box like arrangement. According to an embodiment, the intelligent pod 100 may be a docking station for the drone 102. The intelligent pod 100 may detect the drone 102 once the drone 102 lands on the base station 104. According to an embodiment, the intelligent pod 100 may include a feature to provide a signal until the drone 102 is properly set up on the base station 104. The signal may alert a user to properly set up the drone 102 on the base station 104. According to an embodiment, the signal may be a either a visual signal or an audio signal or a combination of both.

According to an embodiment, the intelligent pod 100 may further comprise of an arrangement for identifying a technical defect in the drone 102. The technical defect may be either a physical defect or a software defect in the drone 102. According to an embodiment, the physical defects may include defects such as but not limited to cracks, breakages, fissures etc. on the drone 102 body and the drone 102 components. The drone 102 components may include components that may be visible on the outer body of the drone 102. The drone 102 components may be components such as but not limited to a rotor, motor, battery, camera, propeller, frame etc. that may be visible on the outer body of the drone 102. According to an embodiment, the software defects may include defects such as an error in transmission of data between the drone 102 and the intelligent pod 100 or an error in charging of the drone 102 battery or other software defects. The data transmission may include data download from the drone 102 to the intelligent pod 100 and data upload from the intelligent pod 100 to the drone 102. According to an embodiment, the data download include transmission of data such as images, videos, flight path and other flight parameters from the drone 102 to the intelligent pod 100. The data upload

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may include transmission of data such as flight plan from the intelligent pod 100 to the drone 102.

According to an embodiment, the arrangement for identifying the technical defect in the drone 102 may include a plurality of an image capturing device 106. According to an embodiment, the image capturing device 106 may be a camera. The plurality of image capturing device 106 may be arranged on the intelligent pod 100. According to an embodiment, each of the plurality of image capturing device 106 may be arranged at different positions. The plurality of image capturing device 106 may capture at least one or more images of the drone 102. According to an embodiment, the plurality of image capturing device 106 may capture the images of the drone 102 from different views. According to an embodiment, the arrangement for identifying the technical defect in the drone 102 may further comprise of a processor 108. The processor 108 may be pre-loaded with the images of the drone 102 in an original condition. According to an embodiment, the processor 108 may analyse the images captured by the plurality of image capturing device 106 with the pre-loaded images of the drone 102 in the original condition. According to an embodiment, the captured images of the drone 102 may be analysed with the pre-loaded images of the drone 102 through image analytics. The image analytics may identify any physical defect on the drone 102 body or the drone 102 components.

According to an embodiment, the intelligent pod 100 for the drone 102 may further include at least one or more sensors 110 to detect the presence of the drone 102. According to an embodiment, the sensor 110 may be a proximity sensor. The sensor 110 may detect the drone 102 when the drone 102 is in proximity to the intelligent pod 100. According to an embodiment, the drone 102 may have a proximity ID. The proximity ID of the drone 102 may enable the intelligent pod 100 to identify and authenticate the drone 102. Once the drone 102 is

authenticated, the intelligent pod 100 may perform multiple functions on the drone 102. According to an embodiment, the intelligent pod 100 may further include a wireless charging feature 112. The intelligent pod 100 may wirelessly charge 112 the drone 102 battery when the drone 102 is in proximity to the intelligent pod 100. Once the sensor 110confirms the presence of the drone 102, the intelligent pod 100 may initiate the wireless charging 112 of the drone 102 battery. In addition to the above, the intelligent pod 100 may further perform wired charging of the drone 102 when the drone 102 is resting on the base station 104. The intelligent pod 100 may consider the drone 102 battery charge and the parameters of the next flight before initiating charging in the drone 102 battery. According to an embodiment, the intelligent pod 100 may further include a wireless data transmission feature 114. The intelligent pod 100 and the drone 102 may wirelessly share information when the drone 102 is proximity to the intelligent pod 100. Once the sensor 110 confirms the presence of the drone 102, the data transmission may get initiated between the intelligent pod 100 and the drone 102. According to an embodiment, the intelligent pod 100 may further perform wired data transmission when the drone 102 is resting on the base station 104. The wireless charging 112 and the wireless data transmission feature 114 may enable the drone 102 to be used for a longer period in air with minimum human intervention.

According to an embodiment of the invention, the intelligent pod 100 for the drone 102 may comprise of a Graphical user interface (GUI) 116. The Graphical user interface 116 may enable a user to see parameters associated with the drone 102. According to an embodiment, the Graphical user interface 116 may display the flight plan. The Graphical user interface 116 may further display the images and videos captured by a camera inbuilt in the drone 102 body. The Graphical user interface 116 may further display flight parameters such as but not limited to height of the drone 102 from the ground surface, speed of the drone 102, temperature of the

drone 102 components, charge of the drone 102 battery, health of the drone 102 battery etc. According to an embodiment, the Graphical user interface 116 may display the physical defect location in the drone 102 body or the drone 102 component. The Graphical user interface 116 may further display the software defects in the drone 102 and an instruction to repair the defect. The Graphical user interface 116 may include multiple icons and menus for a user to carry out commands in the intelligent pod 100 and the drone 102.

According to an embodiment, the intelligent pod 100 may comprise of an I/O device 118 for a user to perform Input/output functions in the intelligent pod 100. A user may use the I/O device 118 to communicate to the intelligent pod 100. The I/O device 118 may be accessible through a set of buttons. According to an embodiment, the set of buttons may be in the form of a keypad or a mouse. According to an embodiment, the intelligent pod 100 may provide output by performing the action as desired and input by the user.

It is understood that the above description is intended to be illustrative, and not restrictive. It is intended to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined in the appended claims. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the respective terms "comprising" and "wherein," respectively.
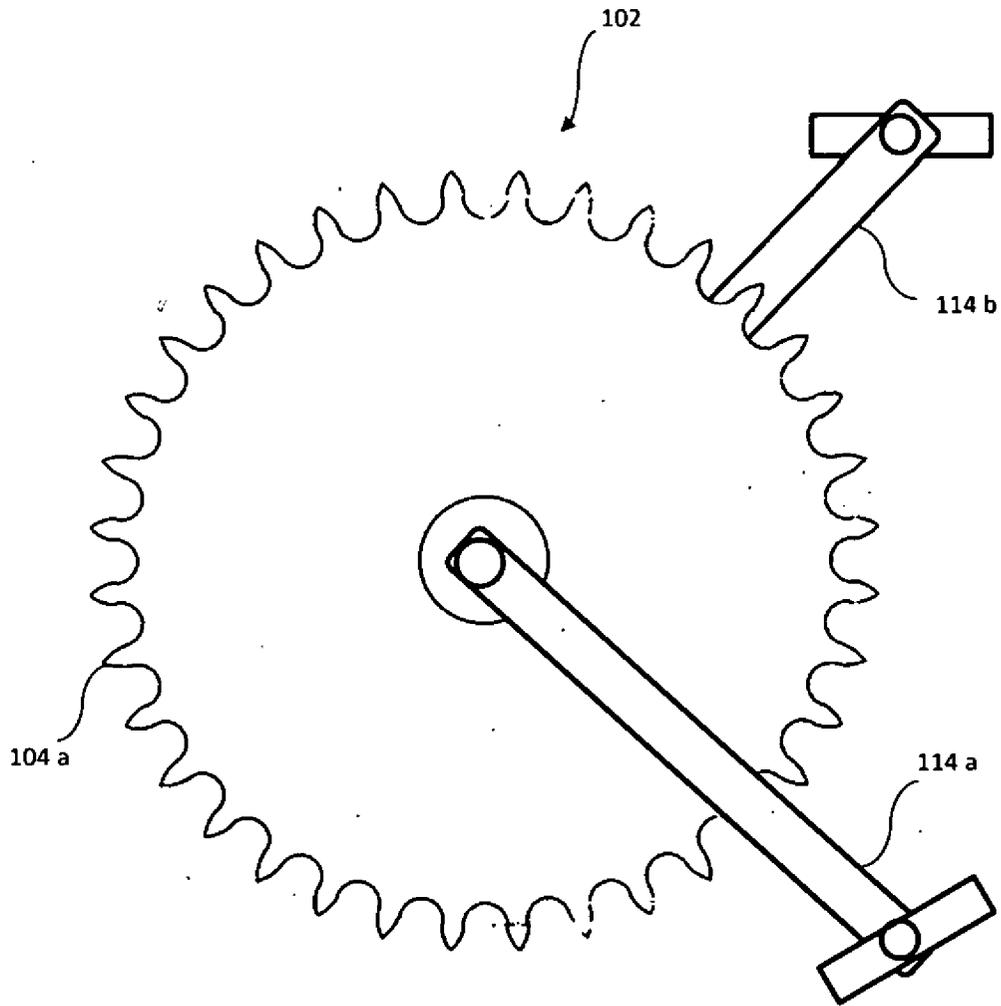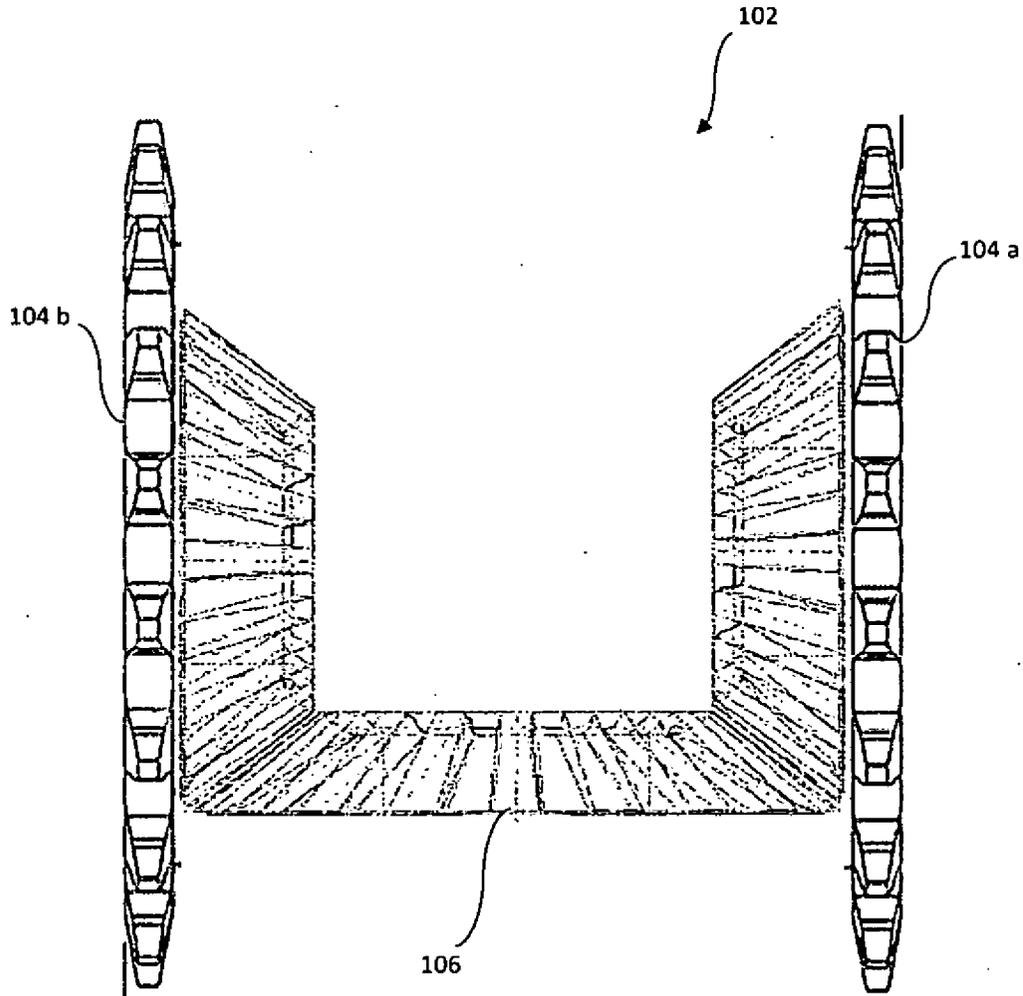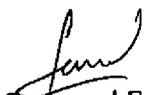
Figure 1

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Figure 2

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