(54) SELF-PROPELLED LUGGAGE

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(57) ABSTRACT

A container with a propelling system that can be controlled remotely, and a sensor system to help to navigate the container.

item 1.a
signal receptor
smart phone/remote

item 1.b
shoe sensor
transmits signal
to phone/remote
and bag

item 1.c
bag sensor
transmits signal
to phone/remote

Bag follows
smart phone/remote
and shoe sensors
Bag follows smartphone/remote and shoe sensors

item 1.c
bag sensor transmits signal to phone/remote

item 1.b
shoe sensor transmits signal to phone/remote and bag

item 1.a
signal receptor smart phone/remote

FIG. 1
Rigid collapsable handle

Enclosure system

Fiberglass construction

Wheel arm

Wide-stance wheels for stability

Embedded Sensors

LED Lights

protective material

FIG. 2
FIG. 4
FIG. 5
Place your bag within a 1-3 ft range and connect to your smartphone.

Connect with Bluetooth.

FIG. 6
Place your foot sensors in a secure location on your shoe.
Connecting your suitcase to your mobile device.

Cancel

FIG.8
Fig. 9
FIG. 10

Found 1 Suitcase YG001

Assign a name

Done
Set the distance for your suitcase to follow you

Mybag01
You

3 ft

Done

FIG. 11
Follow distance

3 ft
SELF-PROPELLED LUGGAGE
CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This is a utility patent application being filed in the United States as a non-provisional application for patent under Title 35 U.S.C. §100 et seq. and 37 C.F.R. §1.53(b) and, claiming the benefit of the prior filing date under Title 35, U.S.C. §119(e) of the United States provisional application for patent that was filed on Oct. 15, 2012 and assigned Ser. No. 61/713,668, which application, as well as any other documents it may incorporate, is incorporated herein by reference in its entirety.

BACKGROUND

[0002] One of the biggest burdens of traveling is toting ones luggage through airport parking lots, which thanks to the events of 9/11 has resulted in quite a huff from the parking lot to the terminal, as well as traversing through the airport. What is needed in the art is a technique that allows a person’s luggage to be self-propelled.

SUMMARY

[0003] A container with a propelling system that can be controlled remotely, and a sensor system to help to navigate the container.

BRIEF DESCRIPTION OF DRAWINGS

[0004] FIG. 1 is an environmental drawing showing an exemplary embodiment within a luggage container.
[0005] FIG. 2 is a conceptual diagram of a suitcase container suitable for embodiments of the self-propelled system.
[0006] FIG. 3 is a conceptual diagram of a sensor that can be incorporated into a shoe for helping to guide or navigate the self-propelled system.
[0007] FIG. 4 is a conceptual diagram of a remote control for a self-propelled system in the form of a dedicated remote or a smart phone embodiment with a resident application.
[0008] FIG. 5 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container.
[0009] FIG. 6 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container.
[0010] FIG. 7 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container.
[0011] FIG. 8 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container.
[0012] FIG. 9 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container.
[0013] FIG. 10 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container.

[0014] FIG. 11 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container.
[0015] FIG. 12 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0016] In general, some embodiments of a self-propelled suitcase or other container are presented herein along with various features, aspects and functions that may be included in one or more embodiments. An exemplary embodiment pertains to a portable motorized suitcase, which can operate in a motorized or manual mode. The suitcase includes an extendable handle, which is provided with multi-directional wheels. The motor and movement of the luggage can be controlled via an electronic device, namely a mobile phone via Bluetooth signal or an electronic remote control.
[0017] The self-propelled/motorized luggage shall track and follow the users motion and direction as guided by a remote control, smart phone and foot sensor. A distance can range from 1 to several feet in radius.
[0018] Features that can be in various embodiments include the following:
[0019] Ability for multiple bags or containers to be controlled by remote or mobile phone;
[0020] A method for following a users smart phone/remote control and foot sensors in close proximity;
[0021] The ability to alert user and other parties if bag is missing or stolen, still or out of battery;
[0022] The ability to track the whereabouts of the bag whenever a bluetooth signal is available;
[0023] The ability to disable the bag from following the user;
[0024] The onboard computer/transponder/receiver for the luggage can have the ability to:
[0025] Be aware of obstacles and avoid collisions and change course with incoming objects/projectiles; and
[0026] Alert the user when it fails to receive incoming bluetooth signal from a mobile device and foot sensor.
[0027] To increase reliability, embodiments can include 3 way communication between the luggage a mobile device and a foot sensor. This feature would allow the luggage to accurately track a users pace, direction and momentum.
[0028] In one embodiment, a scooter or platform can include a controller board and motor driven wheels. The platform includes a wireless communication device, such as a BLUETOOTH transceiver that can communicate with a remote control. In operation, the luggage can be set onto and/or locked or connected to this platform and then guided by the remote control.
[0029] In another embodiment, the luggage carriers that are available for free or rent in airport terminals can be equipped with a controller board that includes a transceiver such as a BLUETOOTH transceiver. When a patron selects a luggage carrier, the user can synchronize his or her remote with the luggage carrier, place his or her luggage onto the carrier and then, guide the luggage to an intended destination.
[0030] In another embodiment, a specialized piece of luggage may include the controller board, transceiver and motor-driven system including one or more wheels.
In some embodiments, the wheel system may include one or more wheels that are motor-driven. In other embodiments, the wheel system may include a single roller ball that can be driven in multiple directions. Other non-motor-driven wheels may be used to stabilize the device.

The remote control can be a dedicated piece of equipment or, may be a device such as a smart phone that includes an application. The remote communications with the various embodiments of the luggage propelling system to control the operation and thus the movement of the luggage. The remote can be used to set up thresholds such as:

- how close the luggage will stay in proximity to the remote,
- the speed that the luggage will be propelled,
- the sensitivity of the sensors to stopping and starting,
- the weight of the luggage being propelled, etc.

The control can be set to a follow-me mode in which the luggage propelling system will simply follow the remote using sensor signals transmitted and received between the remote and the transceiver in the luggage propelling system. In another embodiment, the control can be set to a control mode in which the remote can be used to direct the luggage propelling system to move the luggage from one point to the next.

The luggage propelling system may include brakes to stop or slow the luggage if it begins moving too fast or if it loses synchronization with the remote.

The luggage propelling system can include an audible and/or visual alarm system to alert the user if the luggage propelling system loses contact with the remote, falls over or is moving in an unexpected direction or manner.

The luggage movement system may also include one or more accelerometers, gyro-sensors, GPS location devices, etc., to detect motion and location of the luggage.

The luggage movement system may also include a locking mechanism to prevent opening of the luggage unless the luggage is within a threshold distance from the remote control. In some embodiments, the remote control may include an actuator that can be used to lock or unlock a locking mechanism in or on the luggage.

In some embodiments, the luggage may include a holder to receive the remote control when the luggage does not require movement, such as during storage or upon reaching a desired location.

The technology to communicate between the luggage propelling system and the remote may include a variety of technologies including BLUETOOTH, unlicensed RF spectrum, audio, infrared, sonic, WIFI as well as any other transmission technology.

Commands that can be used to control the movement of the luggage can include one or more of the follow commands, as well as other commands: start, stop, slow down, speed up, left, right, reverse, X degrees left, X degrees right, soft start, hard start, rotate left, rotate right, etc.

In some embodiments, the luggage may include propelled wheels on a single surface, such as the bottom, or may include propelled wheels on multiple surfaces such as the bottom and a side. In some embodiments, propelled wheels may be included on each of the surfaces.

FIG. 12 is an exemplary screen shot of an application running on a smart phone and providing setup, operation and status information for operation of certain aspects of a self-propelled container. On the top of the screen is a quick snapshot of the remaining battery life and an name or identifier for a bag that is connected or is being controlled by the remote control. There is a button, a soft button shown in red in the illustrated embodiment, that is actuated to disconnect a currently connected bag, in this instance to disconnect my Bag01. In some embodiments, this soft button may be an omnipresent button that is placed on all screens, just in case the user would like to disconnect the bag from the device promptly.

Further, the illustrated embodiment includes a numbered dial that a user can adjust by touching the round gray or black button underneath or proximate to the numbers then to adjust the level of the following distance.

A dashboard can then be selected to provide a view into which bags are being controlled, which are available in the area to be controlled, selecting one or more bags to control (simultaneous bags can be controlled with the same command, multiple bags can be selected to respond to the same command and the same sensor or, in other embodiments multiple bags can be selected in a cascaded fashion such that one bag is directly controlled by the sensor in a user and commands from the remote, while a next bag is controlled by a sensor in the first bag and commands relayed by the first bag or commands from the remote).

The present invention has been described using detailed descriptions of embodiments thereof that are provided by way of example and are not intended to limit the scope of the invention. The described embodiments comprise different features, not all of which are required in all embodiments of the invention. Some embodiments of the present invention utilize only some of the features or possible combinations of the features. Variations of embodiments of the present invention that are described and embodiments of the present invention comprising different combinations of features noted in the described embodiments will occur to persons of the art.

It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described herein above. Rather the scope of the invention is defined by the claims that follow.

What is claimed is:

1. A self-propelled luggage system comprising:
   a propelling system for driving at least one drive wheel associated with a container;
   a wireless receiver communicatively coupled to the propelling system and configured to receive control commands;
   a remote control communicatively coupled to the wireless receiver and providing a user interface to enable a user to associate the wireless receiver with the remote control; and
   an application running in the remote control and configured to provide control commands to the wireless receiver, the control commands providing instructions to alter the operation of the propelling system.

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