(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
19 July 2018 (19.07.2018)

WIPO | PCT

(10) International Publication Number
WO 2018/131012 A2

(51) International Patent Classification:
Not classified

(21) International Application Number:
PCT/IB2018/052691

(22) International Filing Date:
18 April 2018 (18.04.2018)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
92102 13 April 2018 (13.04.2018) PA

(71) Applicant: **BUSINESS PERFORMANCE ADVISORS, SA.** [PA/PA]; Edif. Century Tower, Floor 4, Office 401-82. Ricardo J. Alfaro, Panamá (PA).

(72) Inventors: **DE GRACIA JIMÉNEZ, José Alexis**; Edif. Century Tower, Floor 4, Office 401-82. Ricardo J. Alfaro, Panamá (PA). **CASTILLO ZALDIVAR, Elenita Irina**; Edif. Century Tower, Floor 4, Office 401-82. Ricardo J. Alfaro, Panamá (PA). **VALDESPINO CARREÑO, Leonel Servando**; Edif. Century Tower, Floor 4, Office 401-82. Ricardo J. Alfaro, Panamá (PA).

(74) Agent: **BENEDETTI V., Ramón**; Edificio Comosa, piso19, situado en las Avenidas Samuel Lewis y María Ycaza, P.O: Box 0823-00183, Panamá (PA).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH,

(54) Title: METHOD FOR TRACKING AND TRACING PERISHABLE CARGO USING A BIDIRECTIONAL SMART DEVICE

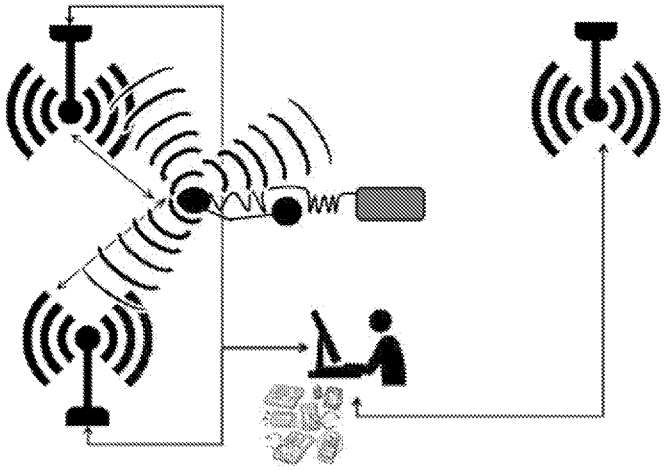

FIG. 1

(57) Abstract: Bidirectional device for cargo location comprising an outer casing made of biodegradable materials, intended to be temporarily attached to a cargo containing element during transport thereof, said casing accommodating therein a communication transmitter and receiver, a chip also comprising a read and write memory for data register, a microprocessor linked to the communication transmitter/receiver and the chip for administration and management of said data transmission communication, a power source and a geolocation element. In a preferred embodiment, the outer casing comprises a front face, intended to be oriented outwardly, a rear face, intended to be in direct contact with the cargo containing element, and attaching elements for attachment thereof to the cargo containing element.

WO 2018/131012 A2

[Continued on next page]

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Published:**

— *upon request of the applicant, before the expiration of the time limit referred to in Article 21(2)(a)*
— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*
— *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

# METHOD FOR TRACKING AND TRACING PERISHABLE CARGO USING A BIDIRECTIONAL SMART DEVICE

## OBJECT OF THE INVENTION

The present invention may be included in smart devices applicable to the transport, distribution, storage and logistics sector, in the technical field of location systems using low power transmission, and it particularly refers to a bidirectional device for cargo location.

## BACGROUND OF THE INVENTION

It is known in the cargo transport, distribution and storage sector, that there is an existing need for keeping, by means of technological strategies, the strength of this sector, being one of the most competitive and relevant worldwide.

For this sector, among the critical factors it daily demands in real time, there can be emphasized tracking and tracing perishable cargo, visible access to the required information so as to speed up proceedings, efficient administration so as to reduce costs and monitoring the condition of perishable or expiry-date cargo so as to improve inventory turnover and profit.

Even when this is a field with investment in technologies that facilitate the processes, there is a great amount of paper documents which supports reception of a container, placing the process in risk of loss, damage or any other mechanism resulting in the lack of backing information and causing the supply chain to be affected by different factors.

All the above also applies to administration of the cargo inventory within the cargo hold, which in many cases is not efficient and there are multiple mistakes in the process.

The current solutions incorporate mechanisms for tracking/tracing cargo containers by means of GPS technology, such as those described in the patent documents number US8659420B2 and US8890683B2.

Focusing on containers leaves a door open to cargo smuggling and other illegal situations within the supply chain process, as well as not showing interest in speeding up proceedings and processes involved in the perishable cargo logistics with the purpose of securing this according to a supply scheme.

Currently, smart devices lack of bidirectional information, since they are focused on transmitting information from an external data base. These are, therefore, passive devices, since they do not save information and depend on a communication network. Examples of this type of device are shown in patent numbers US8965796B1 and US856124B1.

For this reason, there is the need for realizing a cargo tracking and tracing at a detailed level, with all the information being saved into a device, without depending on a communication network as a support for proceedings documents, used as a localizer of the exact location of the perishable cargo, and with a limited list of tasks which can be optimized just by having a smart device which can be mounted and adhered to any surface per box or package.

## DESCRIPTION OF THE INVENTION

The present invention refers to a smart device, intended for being fixed to packages and other cargo containing elements during storage and transport thereof. For this purpose, the device comprises an outer casing, attachable to the surface of a cargo containing element and made of biodegradable materials, inside of which there is located at least one communication bidirectional transmitting and receiving element, a power source, preferably of the rechargeable type, a microprocessor and a geolocation element, preferably of the GPS type.

In a preferred embodiment, the casing has a rectangular geometry and comprises an adhesive surface as an attaching element for attachment thereof to the surface of a cargo containing element.

This smart device receives external information by means of any communication network (including the GPS system) for updating its own data register, saves them according to a previously configured data structure and sends information of the coordinates to a portable data reader, a data server or any other system administering or monitoring information tracking and tracing by means of location and mapping systems for locating the product.

This smart device allows information to flow bidirectionally, since it can receive and transmit communication related to its own data register, which allows speeding up the supply chain process.

**DESCRIPTION OF THE DRAWINGS**

To implement the present description being made and in order to provide a better understanding of the characteristics of the invention, according to a preferred practical embodiment thereof, a set of drawings is attached as part of this description, with an illustrative but not limitative purpose, which represents the following:

Figure 1.- It shows an schematic view of the operation of the smart device object of the invention.

Figure 2.- It show an inner view of the elements of the device.

Figure 3.- It shows an exploded perspective view of the elements of the device.

**PREFERRED EMBODIMENT OF THE INVENTION**

The following is a detailed description, with the help of the figures referred above, of an exemplary preferred embodiment of the device object of the present invention.

Figure 1 illustrates the smart device operation schematically, and it can be observed therein that the smart device exchanges information, both transmitting and receiving it, by means of communication networks. Receiving antenna located in the area redirect information to consulting electronic devices, such as PDA (personal digital assistant, palmtop computer, personal organizer or electronic agenda), smartphone or similar, for

it to be visualized by the users and transmitted to systems being supplied with the information contained in their own data register.

Figure 2 shows an inner view of the components of the smart device object of the invention. Inside an outer casing (1) made of biodegradable materials, there are arranged a communication transmitting/receiving element (2), a chip (3) integrating in turn a read and write memory for data register, and a microprocessor (4) linked to the communication transmitter/receiver (2) and to the chip (3) for administration of the data register and management of the data transmission communication. Likewise, the device comprises a geolocation element (5). A power source (6) supplies for the operation of the communication transmitter/receiver (2), the chip (3), the microprocessor (4) and the geolocation element (5).

Figure 3 illustrates an exploded view of the device, where it can be appreciated that the casing also comprises a front face (7), intended to be oriented outwardly, and a rear face (8), intended to be in direct contact with the surface of a cargo containing element, for which it comprises attaching elements, which in the preferred embodiment are adhesive strings.

## REIVINDICACIONES

1. Bidirectional device for cargo location, comprising an outer casing made of biodegradable materials, intended to be temporary attached to a cargo containing element during transport thereof, said casing accommodating therein:

- a communication transmitter and receiver,
- a chip also comprising a read and write memory for data register,
- a microprocessor linked to the communication transmitter/receiver and to the chip for administration of the data register and management of the data communication transmission
- a power source, and
- a geolocation element.

2. Bidirectional device for cargo location according to claim 1, wherein the outer casing comprises:

- a front side, intended to be oriented outwardly, and
- attaching elements for attachment thereof to the cargo containing elements.

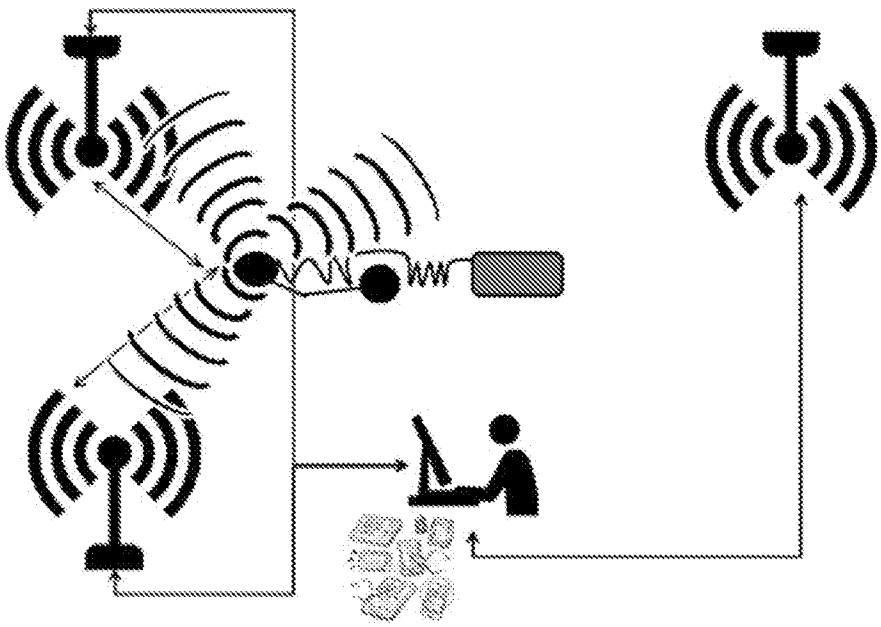

FIG. 1

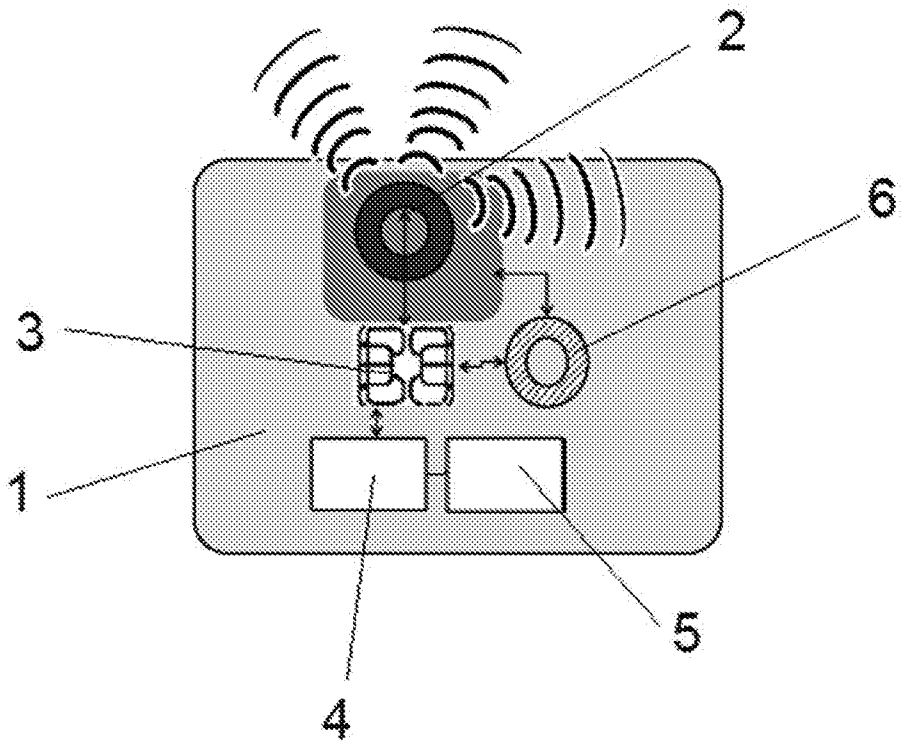


FIG. 6

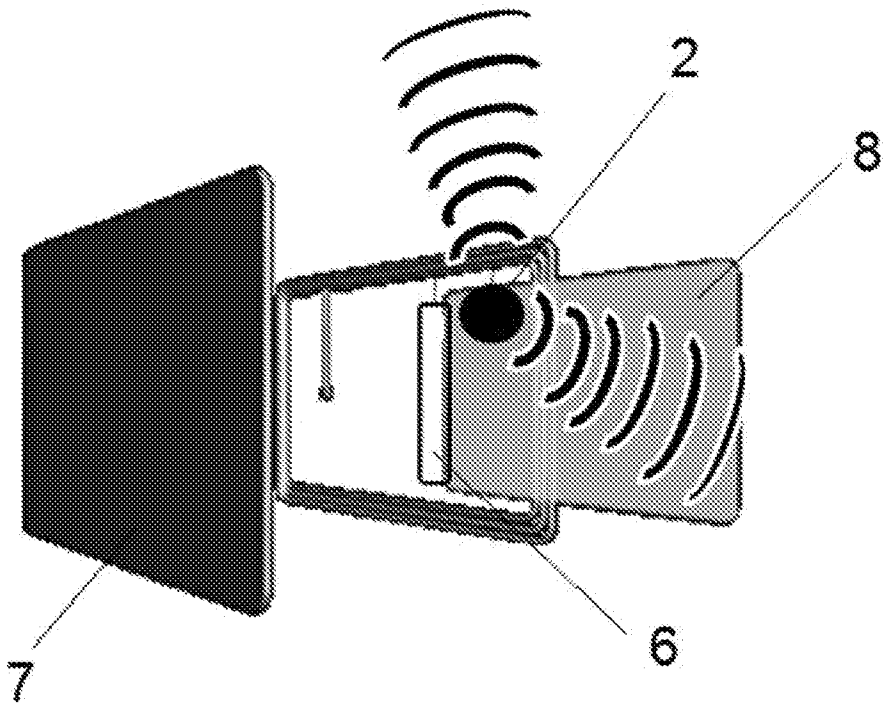


FIG. 3