Device for storing elements

The present invention relates to a device for storing elements.

The present invention also relates to an installation comprising such a storage device.

The elements are, for example, pouches containing biological products, such as blood products (pouches of primary blood, plasma, platelets, red blood cells ...) or cellular engineering products (cells, strains, etc.), or pouches for of drugs, such as chemotherapy pouches.

It is known to store such pouches in cooling structures formed by drawers in which the pouches are inserted. The pouches inserted in such structures generally comprise an identifying tag, such as an RFID (radio frequency identification) tag, in which information relating to the corresponding pouch is stored. In addition, a reader, such as an RFID reader, is arranged in relation to the intended location of the pouches of each drawer in order to read and update the information contained in the tags of the pouches.

However, when the tags of the pouches are not positioned directly opposite the reader in the drawer, the reading of the information contained in the tag of the pouches may not be carried out.

There is therefore a need for a device for storing elements allowing the reliable checking of the state of the elements without encumbering the storage space.

According to a first aspect of the present invention, there is provided a device for storing elements, wherein each element comprises a first wireless communication unit, and wherein the device comprises a plurality of drawer assemblies, the drawer assemblies being assembled to each other, and wherein each drawer assembly comprises:

- a support comprising a housing,
- a single drawer positioned in the housing of the support and slidable relative to the support, wherein the drawer comprises a bottom defining at least one slot for receiving a single element,
- for each slot, at least one second wireless communication unit capable of transmitting radio frequency waves, wherein the second communication unit is designed to communicate with all the first communication units,

wherein the bottom of the drawer is made of a material able to be traversed by radio frequency waves emitted by the, or each, second communication unit, wherein the, or each, second communication unit is arranged under the bottom of the drawer

facing the corresponding slot of the bottom of the drawer, in order to allow communication between the second communication unit and the first communication unit of the element received in the slot.

According to particular embodiments, the device comprises one or more of the following characteristics, taken separately or in any technically feasible combination:

- the bottom of the drawer is made of plastic;
- the elements are containers of biological products, medicines or therapeutic preparations;
- each first communication unit is a radio identification tag and each second communication unit is a radio identification reader;
- each second communication unit is secured to the support of the corresponding drawer assembly; while each second communication unit is secured to the drawer of the corresponding drawer assembly;
- the device comprises a plurality of drawer assemblies, wherein an upper end and/or a lower end of the support of each drawer assembly comprises an assembly member with a respective complementary assembly member, of a lower end or of a upper end of the support of another of the drawer assemblies, so that the drawer assemblies are assembled on top of one another to form a vertical stack;
- each first communication unit comprises information relative to the element corresponding to said first communication unit, each second communication unit being, if appropriate, able to communicate with the first communication unit of the element received in the slot facing said second communication unit for obtaining information relative to the element, wherein the device further comprises a processing unit connected to each second communication unit, and wherein the processing unit is able to determine from the communicated information, the occupation of each slot and, where appropriate, the state of the element received in the slot, wherein the processing unit is able to trigger an alarm according to the occupation of each slot and, if applicable, determine the state of the element corresponding to the slot.

According to a second aspect of the present invention, there is provided an installation comprising:

- an enclosure comprising an internal compartment, and

CLAIMS

1. Device for storing elements, wherein each element comprises a first wireless communication unit, wherein the device comprises a plurality of drawer assemblies, the drawer assemblies being assembled to each other, and wherein each drawer assembly comprises:

- a support comprising a housing,
- a single drawer positioned in the housing of the support and slidable relative to the support, wherein the drawer comprises a bottom defining at least one slot for receiving a single element,
- for each slot, at least one second wireless communication unit capable of transmitting radio frequency waves, wherein the second communication unit is designed to communicate with all the first communication units ,

wherein the bottom of the drawer is made of a material able to be traversed by radiofrequency waves emitted by the or each second communication unit, wherein the or each second communication unit is arranged under the bottom of the drawer facing the corresponding slot of the bottom of the drawer in order to allow communication between the second communication unit and the first communication unit of the element received in the slot.

2. Device according to claim 1, wherein the bottom of the drawer is made of plastic.

3. Device according to claim 1 or 2, wherein the elements are containers of biological products, drugs or therapeutic preparations.

4. Device according to any one of the claims 1 to 3, wherein each first communication unit is a radio identification tag and each second communication unit is a radio identification reader.

5. Device according to any one of the claims 1 to 4, wherein each second communication unit is secured to the support of the corresponding drawer assembly.

6. Device according to any one of the claims 1 to 4, wherein each second communication unit is secured to the drawer of the corresponding drawer assembly.

7. Device according to any one of the claims 1 to 6, wherein the device comprises a plurality of drawer assemblies with an upper end and/or a lower end, wherein the support of each drawer assembly comprises an assembly member with a respective complementary assembly member of a lower end or an upper end of the support of another of the drawer assemblies, so that the drawer assemblies may be assembled on each other to form a vertical stack.

8. Device according to any one of the claims 1 to 7, wherein each first communication unit comprises information relative to the element corresponding to said first communication unit, wherein each second communication unit is, if appropriate, able to communicate with the first communication unit of the element received in the slot opposite the second communication unit for obtaining information relative to the element, wherein the device further comprises a processing unit connected to each second communication unit, wherein the processing unit is able to determine, from the communicated information, the occupation of each slot and, if appropriate, a state of the element received in the slot, wherein the processing unit is able to trigger an alarm according to the occupation of each slot and, if appropriate, the state of the element corresponding to the slot.

9.- Installation comprising:

- an enclosure comprising an internal compartment, and
- a device according to any one of the claims 1 to 8, wherein the device is arranged in the inner compartment of the enclosure.

10. Installation according to claim 9, wherein the enclosure is a refrigerating enclosure.

11. Installation according to claim 9, wherein the elements are platelet containers, while the enclosure is a platelet stirrer.