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(54) CIGARETTE PACK

(57) A cigarette pack is revealed. The cigarette pack includes a box (10), a package (29) and a radio-frequency identification (RFID) tag (30). The box is enclosed in and sealed through the package. The package includes an extension portion (22) extended from the box while the RFID tag is attached to an attached surface (23) on the extension portion of the package. There is a certain distance between the RFID tag and the box. Thus electromagnetic waves will not be shielded by metal of the box and the reading of the RFID tag of the present cigarette pack will not be affected. Thereby the cigarette pack can be applied to unmanned stores or open shelves. The quick check-out and anti-theft detection can be achieved by the RFID tag used in combination with a RFID reader.

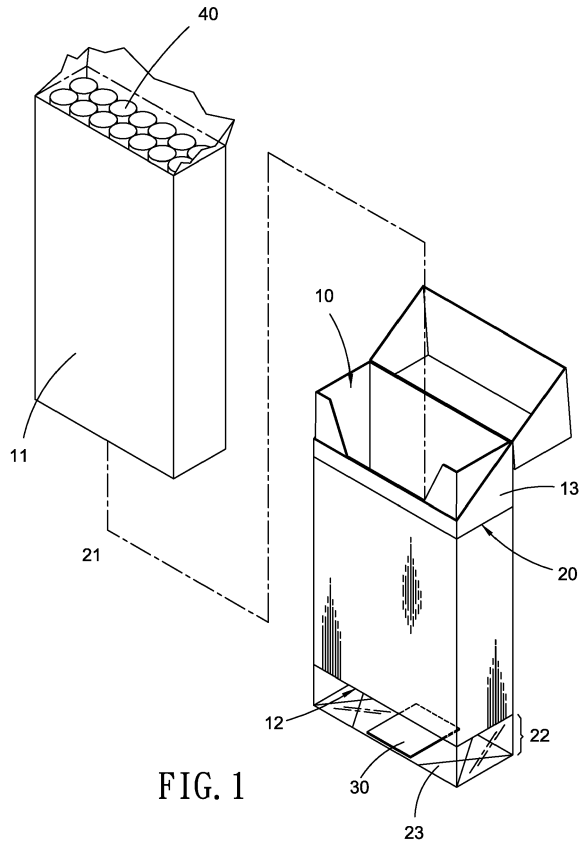

FIG. 1

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a cigarette pack, especially to a cigarette pack able to be applied to unmanned stores or open shelves for achieving quick check-out and anti-theft purpose by RFID tags working in conjunction with RFID readers.

Description of Related Art

[0002] A cigarette pack is generally formed by an inner aluminum foil layer and an outer wrapping paper. For better airtight and watertight performance, a thin metal layer is formed on the outermost layer of the wrapping paper by special technology. In general, electromagnetic radiation has been shielded by metal. Thus both radiation patterns and impedance characteristics of an antenna of a general radio frequency identification (RFID) tag are significantly affected once the RFID tag being attached to the cigarette pack with the metal layer. Thus the RFID tag has poor performance, only able to be read at a short distance. Therefore the common RFID tag can't be directly used on the cigarette pack.

[0003] Anti-metal RFID tags are specialized tags that can be read from metal surfaces (conductive surfaces). However, the production cost of the specialized tag is dramatically increased because materials for the anti-metal tags including thick ceramic, dielectric substrates, absorbing materials have a higher cost.

SUMMARY OF THE INVENTION

[0004] Therefore it is a primary object of the present invention to provide a cigarette pack which can be applied to unmanned stores or open shelves for achieving quick check-out and anti-theft function by RFID tags working in conjunction with RFID readers.

[0005] In order to achieve the above object, a cigarette pack according to the present invention includes a box for storage of cigarettes, a package used for enclosing and sealing the box, and a RFID tag attached to the package. The package has an extension portion that is extended toward an outer side of the box and provided with at least one attached surface while the RFID tag is attached to the attached surface of the extension portion of the package. There is a certain distance between the RFID tag and the box. The RFID tag is arranged at the extension portion of the package so that the RFID tag will not be shielded by the cigarette pack and the reading of the RFID tag will not be affected.

[0006] Preferably, the materials for the package can be plastic film or paper.

[0007] Preferably, the package can be made from either polypropylene film (PP film), or biaxially oriented polypropylene film (BOPP film).

[0008] Preferably, the package can extend from at least one surface of the box.

[0009] Preferably, the extension portion is extended from a bottom surface of the box to an outer side of the box. There is a certain distance between the attached surface of the package and the bottom surface of the box.

[0010] Preferably, the package is extended from a side surface of the box towards the outer side of the box. There is a certain distance between the attached surface of the package and the side surface of the box.

[0011] Preferably, the attached surface of the package and the side surface of the box are perpendicular to each other.

[0012] Preferably, the RFID tag can be attached to the inner side or the outer side of the package by adhesives.

[0013] The design of the cigarette pack of the present invention solves the metal's interference on the RFID so that the reading of the RFID tag will not be affected by metal of the cigarette pack. Thus the present invention can be applied to unmanned stores or open shelves for achieving quick check-out and providing theft resistance by RFID tags used in combination with RFID readers.

[0014] As to the implementation, advantages and functions of the present invention, please refer to the figures and the following embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein:

Fig. 1 is an explosive view of an embodiment according to the present invention;
Fig. 2 is a perspective view of an embodiment according to the present invention;
Fig. 3 is a front view of an embodiment according to the present invention;
Fig. 4 is a partial structural diagram of an embodiment according to the present invention;
Fig. 5 is a schematic drawing showing an RFID tag attached to a side surface of a package of an embodiment according to the present invention;
Fig. 6 is a perspective view of another embodiment according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0016] In the following embodiments, relative positions of components are as shown in the figures.

[0017] First refer to Fig. 1, Fig. 2 and Fig. 3, an explosive view, a perspective view and a front view of an embodiment according to the present invention are revealed.

[0018] A cigarette pack according to the present invention includes a box 10, a package 20 and a RFID (radio-frequency identification) tag 30.

[0019] The box 10 that holds cigarettes 40 for storage therein is generally a paperboard box. An aluminum foil 11 (or tin foil) set in the box 10 is used to wrap the stacked cigarettes 40 and protect the cigarettes 40 from moisture.

[0020] The box 10 is enclosed in and sealed through the package 20. The package 02 is generally made from plastic film with a gold pull string 21. The gold pull string 21 is disposed around one side of the box 10, close to an opening of the box 10. By pulling the gold pull string 21, the package 20 that seals the opening of the box 10 is removed easily so that users can take the cigarette through the opening of the box 10. The materials for the package 20 can be plastic film such as polypropylene film (PP film), or biaxially oriented polypropylene film (BOPP film). In a preferred embodiment, the thickness of the plastic film is a bit thicker than that of plastic film of the general cigarette pack to have a higher structural strength. The package 20 made from transparent plastic film is transparent and having advantages of low cost and beautiful appearance. In other embodiments, the material for the package 20 can be paper without any metal ingredients.

[0021] The package 20 includes an extension portion 22 extended from the box 10 toward outside. Refer to Fig. 2 and Fig. 3, the extension portion 22 is extended from a bottom surface 12 of the box 10 to an outer side of the box 10. The RFID tag 30 is attached to an attached surface 23 on the extension portion 22 of the package 20. There is a certain distance between the attached surface 23 of the package 20 and the bottom surface 12 of the box 10 to keep a distance between the RFID tag 30 and the box 10. It is not necessary to use expensive anti-metal tag as the RFID tag 30. The RFID tag 30 can be a general tag produced by conductive ink printed on a plastic substrate (such as polyethylene terephthalate (PET)), as shown in Fig. 4. The RFID tag 30 can be attached to the inner side or the outer side of the package 20 by adhesives. The present cigarette pack uses the extension portion 22 of the package 20 for disposition of the RFID tag 30. Thus electromagnetic waves will not be shielded by metal and the reading of the RFID tag 30 will not be affected.

[0022] Refer to Fig. 5, the RFID tag 30 is arranged at another position. An attached surface 23 of the package 20 for attachment of the RFID tag 30 and a side surface 13 of the box 10 are perpendicular to each other.

[0023] In a preferred embodiment of the preset invention, the package 20 can extend from at least one surface of the box 10 to an outer side of the box 10. As shown in Fig. 6, the package 20 is extended from the side surface 13 of the box 10 towards the outer side of the box 10. There is a certain distance between the attached surface 23 of the package 20 and the side surface 13 of the box 10 so as to keep a certain distance between the RFID tag 30 and the box 10.

[0024] Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details, and representative devices shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalent.

Claims

1. A cigarette pack comprising:

a box that contains cigarettes therein for storage of the cigarettes;
a package used for enclosing and sealing the box and having
an extension portion extended toward an outer side of the box and provided with at least one attached surface;
a radio-frequency identification (RFID) tag attached to the attached surface of the extension portion of the package;

wherein there is a distance between the RFID tag and the box.

2. The cigarette pack as claimed in claim 1, wherein materials for the package includes plastic films and paper.

3. The cigarette pack as claimed in claim 2, wherein the plastic films include polypropylene film (PP film), or biaxially oriented polypropylene film (BOPP film).

4. The cigarette pack as claimed in claim 1, wherein the package is able to extend from at least one surface of the box.

5. The cigarette pack as claimed in claim 1, wherein the extension portion is extended from a bottom surface of the box to an outer side of the box; there is a distance between the attached surface of the package and the bottom surface of the box.

6. The cigarette pack as claimed in claim 1, wherein the package is extended from a side surface of the box to an outer side of the box; there is a distance between the attached surface of the package and the side surface of the box.

7. The cigarette pack as claimed in claim 1, wherein the attached surface of the package and a side surface of the box are perpendicular to each other.

8. The cigarette pack as claimed in claim 1, wherein the RFID tag is attached to an inner side or an outer

side of the package by at least one adhesive.

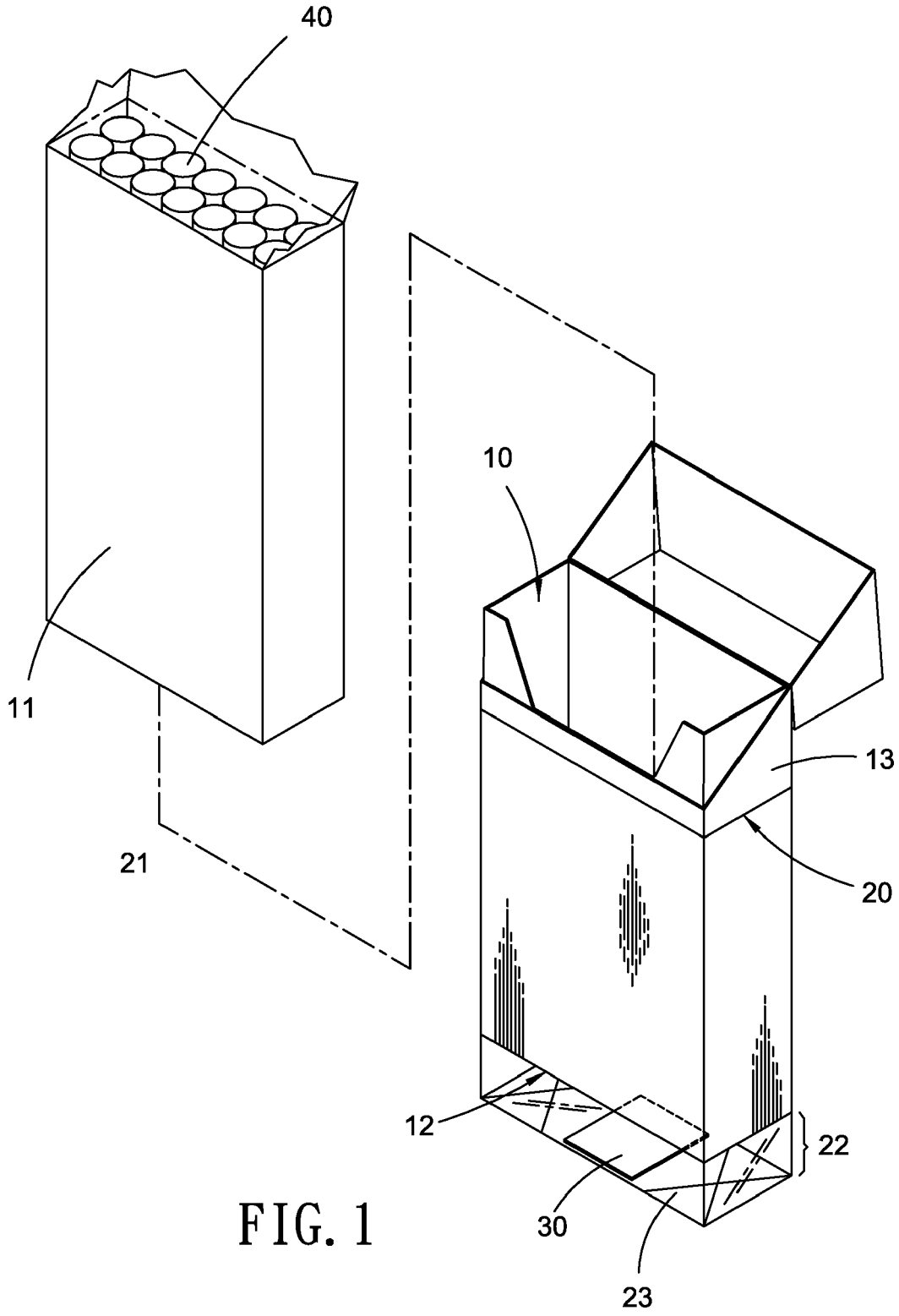

FIG. 1

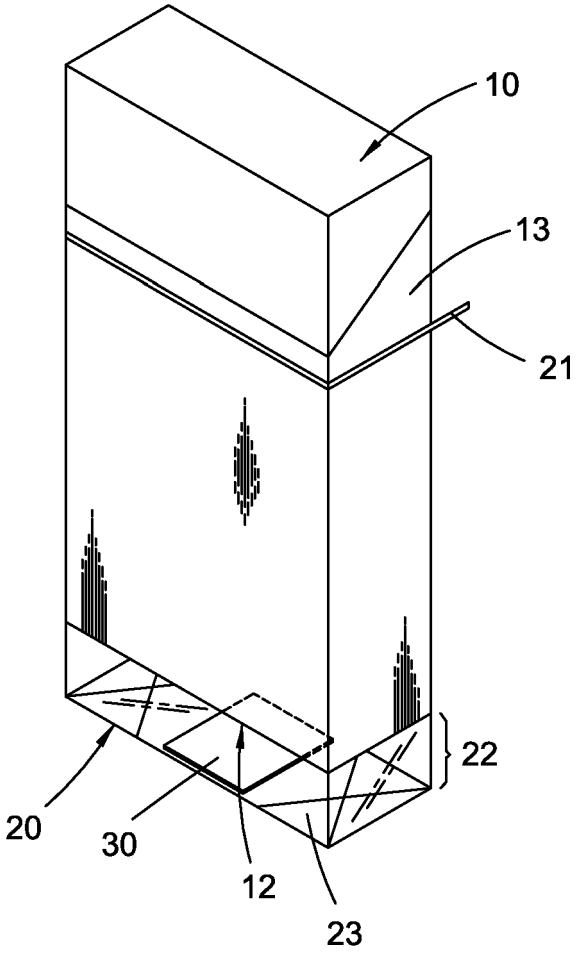

FIG. 2

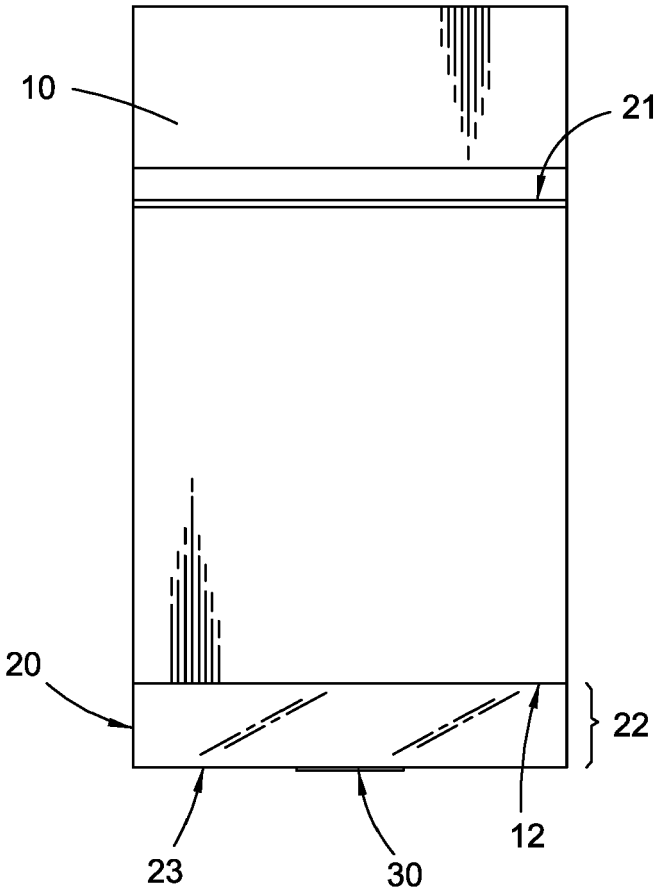

FIG. 3

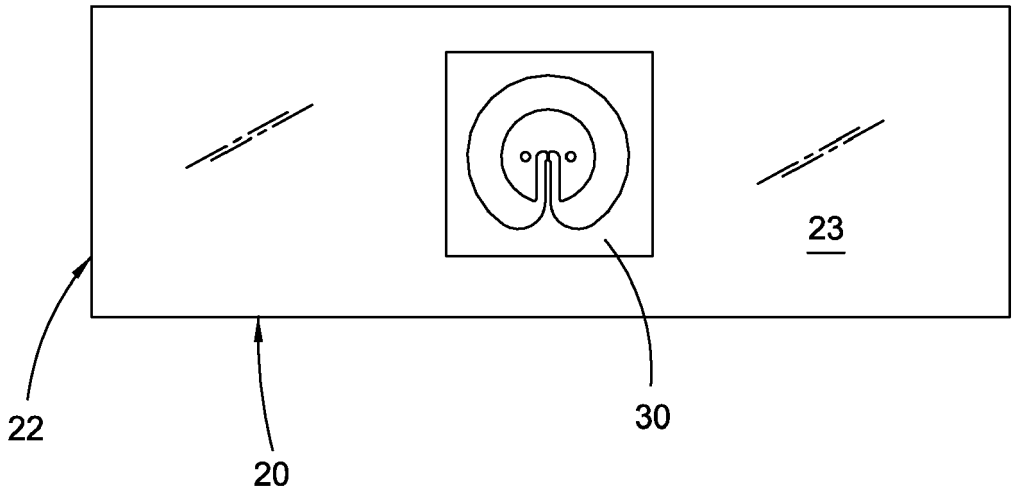

FIG. 4

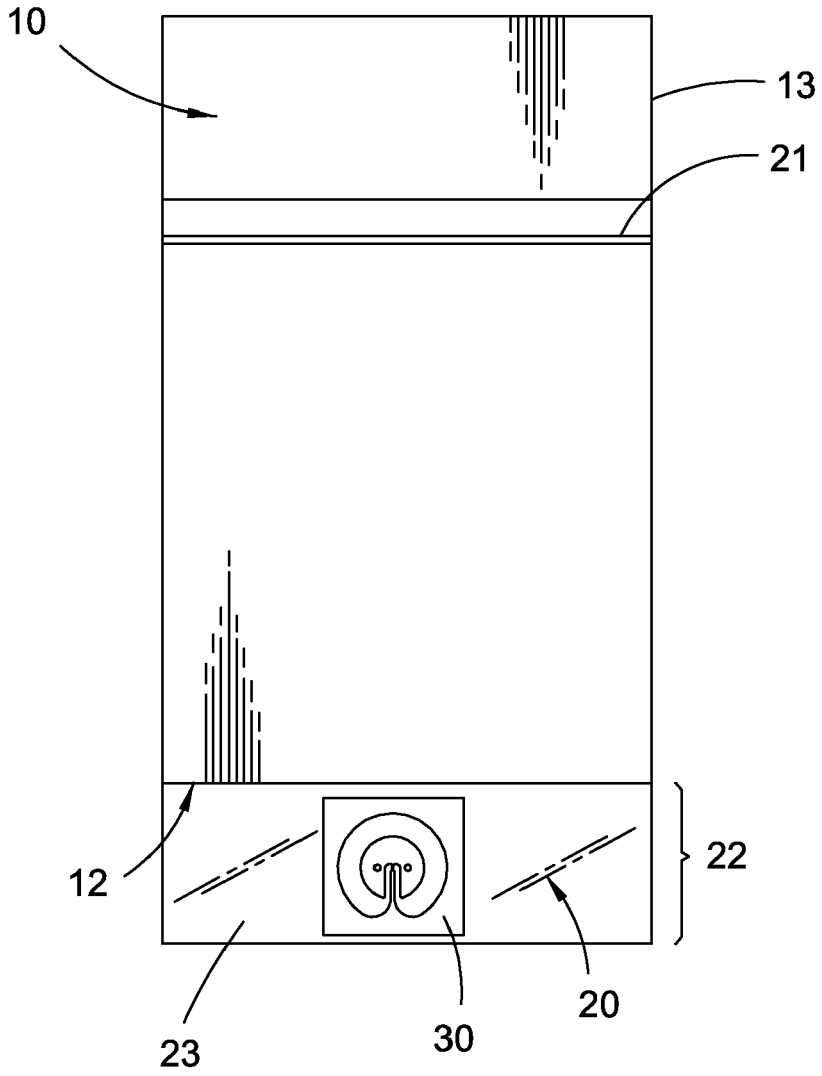

FIG. 5

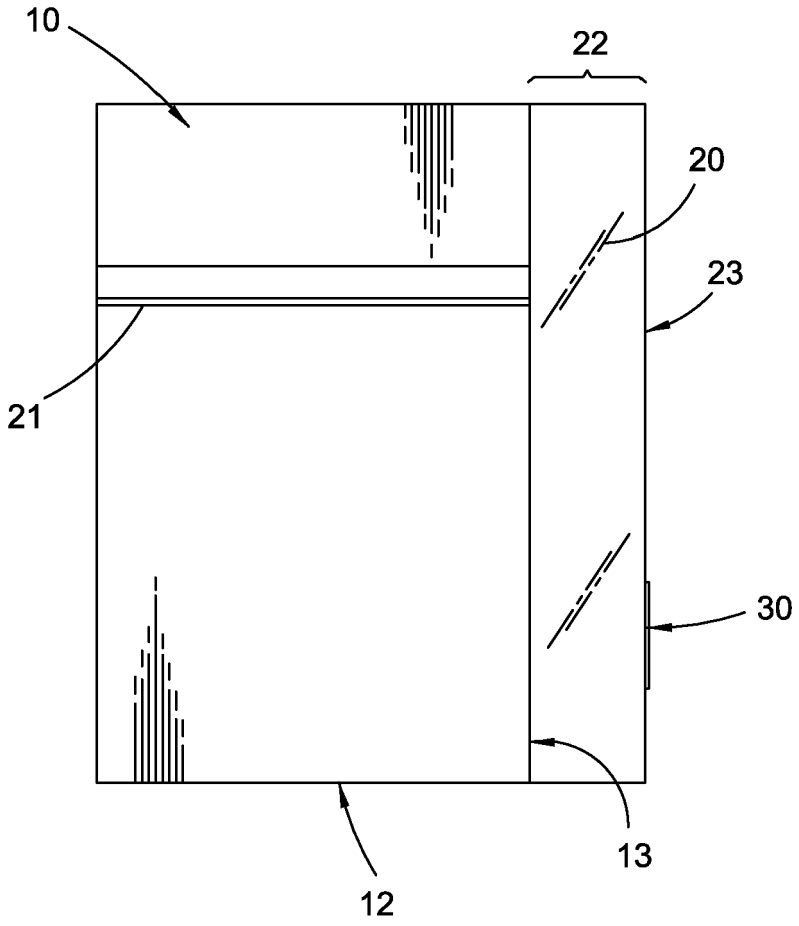

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 18 17 7417

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	DE 10 2014 222994 A1 (FOCKE & CO [DE]) 17 March 2016 (2016-03-17) * paragraph [0051]; figure 1 *	1-8	TECHNICAL FIELDS SEARCHED (IPC) B65D
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 October 2018	Leijten, René

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 18 17 7417

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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