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(56) Documents Cited:
EP 0514137 A **WO 1998/053141 A1**
DE 202005011641 U

(58) Field of Search:
UK CL (Edition X) **B5N**
INT CL **B32B, B65D**
Other:

(54) Abstract Title: **Biodegradable paper board**

(57) A bio-degradable paper board includes a paper board (10) and a bio-degradable layer (20) that is coated to the paper board by an extrusion-coating machine. The bio-degradable foam-type layer may be a layer of polylactic acid (PLA), polyethylene terephthalate (PET) or corn starch.

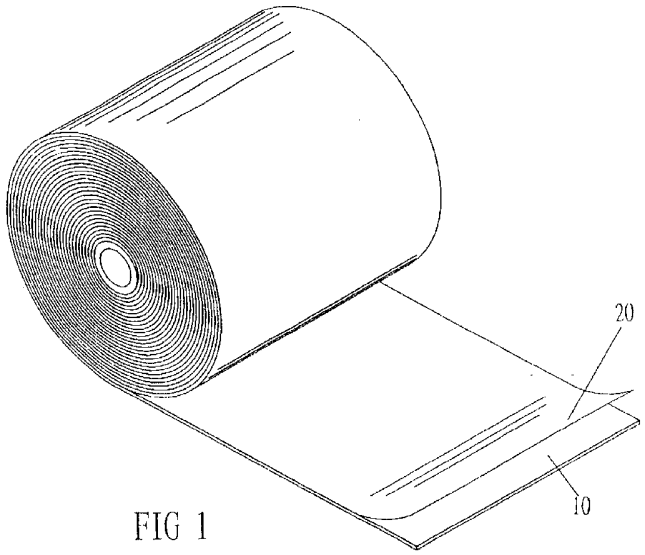

FIG 1

GB 2 441 984 A

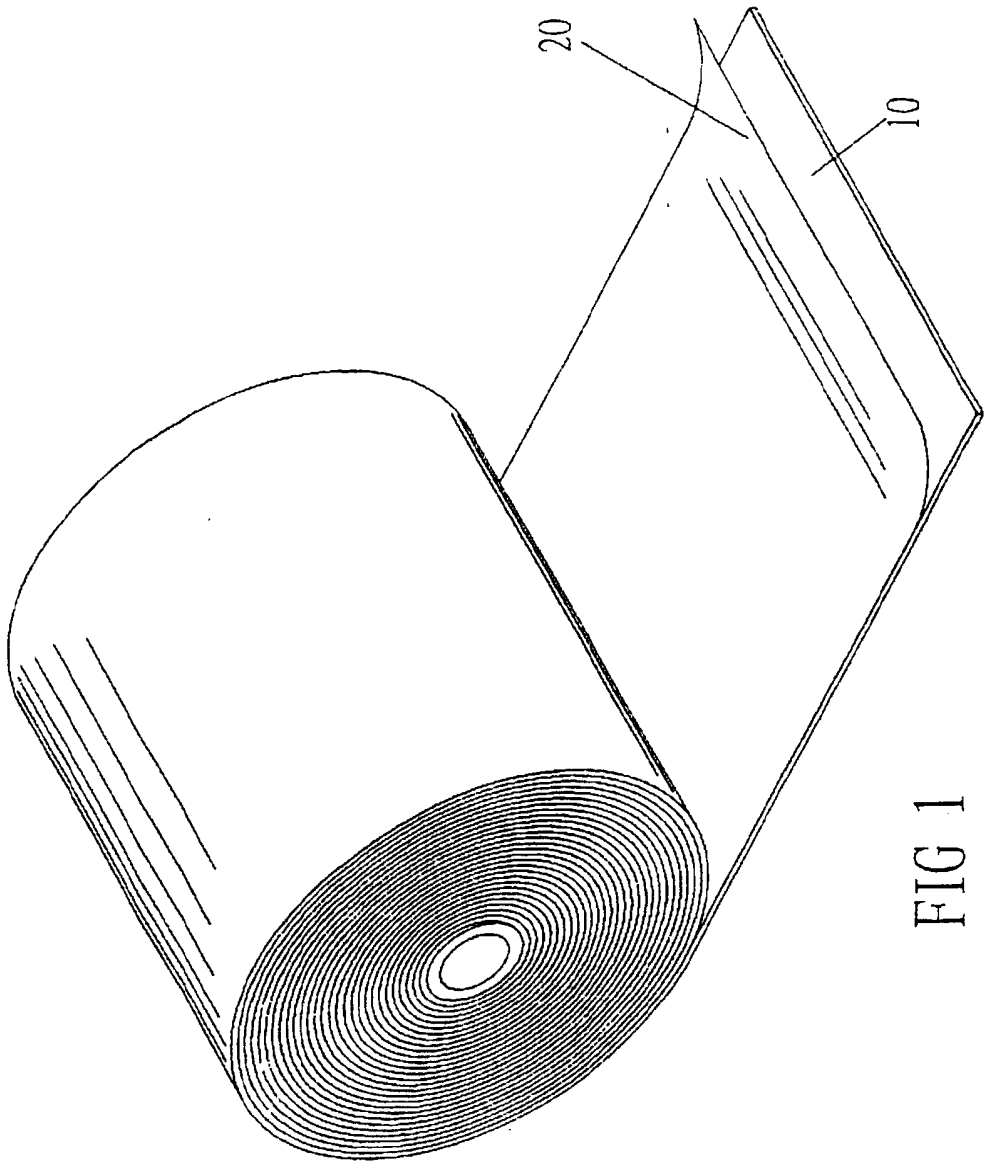

FIG 1

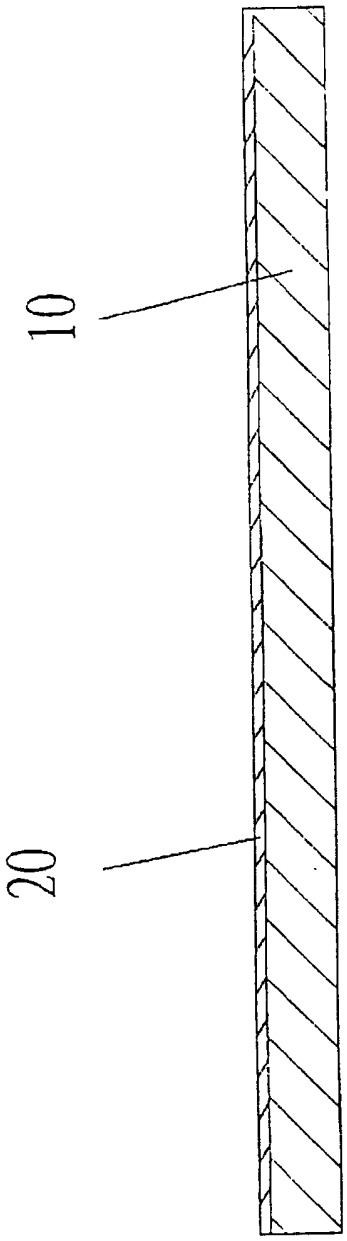

FIG 2

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BIO-DEGRADABLE PAPER BOARD

FIELD OF THE INVENTION

The present invention relates to a bio-degradable paper board having a coating made by Polylactic Acid (PLA), Polyethylene Terephthalate (PET) or corn starch material and food is stored in a box made by the bio-degradable board and in contact with the coating.

BACKGROUND OF THE INVENTION

A conventional food box made by paper material generally includes a paper board and a layer which is glued to the outside of the food box. The layer includes printed patters and does not contact the food. The layer is made by polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC) or corn starch. Only the corn starch is bio-degradable. The layer has to be made to have a certain thickness and patterns are printed on the layer before the layer is glued to the food box. An adhesive is located between the outside of the paper box and

the layer. Besides, the layer is not directly connected to the food box, the layer might be peeled off if the adhesive is not applied evenly on the surface of the paper-made food box. Furthermore, the layer has to be made to have a certain thickness so that it includes a higher manufacturing cost. Most important is that PE, PP and PVC cannot be bio-degraded.

The present invention intends to provide a bio-degradable paper board which can be made into food boxes and includes a layer of PET or PLA which is coated on the paper board directly by extrusion-coating machine.

SUMMARY OF THE INVENTION

According to the invention, there is provided a bio-degradable paper board comprising:

a paper board and a bio-degradable layer being coated to the paper board by extrusion-coating machine.

The present invention relates to a bio-degradable paper board that comprises a paper board and a bio-degradable layer is coated to the paper board by extrusion-coating machine. The bio-degradable layer can be a layer of Polylactic Acid (PLA), Polyethylene Terephthalate (PET) or corn starch. The paper board with the bio-degradable layer can be made to be food containers and the bio-degradable layer can be in contact with food directly.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be further described, by way of example only, and with reference to the accompanying drawings given for purposes of illustration only, in which:

Figure 1 shows a preferred embodiment of a paper roll according to the invention, and

Figure 2 is a cross-sectional view through the paper roll of Figure 1, showing the bio-degradable layer on the paper board.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figures 1 and 2, the paper board 10 of the present invention is in a form of a paper roll and a bio-degradable layer 20 is coated to the paper board 10 by extrusion-coating machine. The bio-degradable layer 20 is a layer of Polylactic Acid (PLA), Polyethylene Terephthalate (PET) or corn starch.

The bio-degradable layer 20 can be made from PET such as Biomax (Reg. TM) PET by DuPont, bio-degradable PET particles by Far-Eastern Textile Ltd (Taiwan), Polylactic Acid (PLA) particles by Nature works L.L.C., or corn starch. The material is heated to be liquid and extruded by an extruder and the liquid is extruded by T-Die to be foam-type layer 20. The paper board 10 is in a form of a paper roll which is pre-heated and then treated by corona treatment.

The foam type layer 20 is applied on the paper board 10 and both of which are fed between silicon rollers and cooling rollers to evenly press the

layer 20 on the paper board 10. The material of the layer 20 is combined with fibers of the paper board 10. The pressed paper board 10 and the layer 20 are then treated by another corona treatment to open the orifices of the paper board 10. The paper board 10 is then can be cut and folded to be food containers.

There is no adhesive located between the bio-degradable layer 20 and the paper board 10 and the bio-degradable layer 20 does not need to be made to be a certain thickness so that the procedures are simplified and the manufacturing cost is reduced. The paper board 10 and the layer 20 are both bio-degradable and the material of the bio-degradable layer 20 can be degraded into water and carbon dioxide within few months. The paper board 10 is sold in a form of paper roll which can be cut as desired.

While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that

further embodiments may be made without departing from the scope of the present invention as defined by the appended claims.

CLAIMS:

1. A bio-degradable paper board comprising:

a paper board and a bio-degradable layer being coated to the paper board by extrusion-coating machine.

2. A bio-degradable paper board as claimed in claim 1, wherein the bio-degradable layer is a layer of Polylactic Acid (PLA).

3. A bio-degradable paper board as claimed in claim 1, wherein the bio-degradable layer is a layer of PET.

4. A bio-degradable paper board as claimed in claim 1, wherein the bio-degradable layer is a layer of corn starch.

5. . A bio-degradable paper board, substantially as herein described, with reference to or as shown in the accompanying drawings.

Patent Office

For innovation

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Application No: GB0618722.3 **Examiner:** Robert Mirams

Claims searched: 1 to 5 **Date of search:** 11 December 2006

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1 to 5	DE202005011641 U (CHANG) whole document
X	1 and 2	WO98/53141 A1 (CARGILL) whole document
X	1 and 2	EP0514137 A (MITSUI TOATSU) whole document

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

B5N

Worldwide search of patent documents classified in the following areas of the IPC

B32B; B65D

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC, JAPIO