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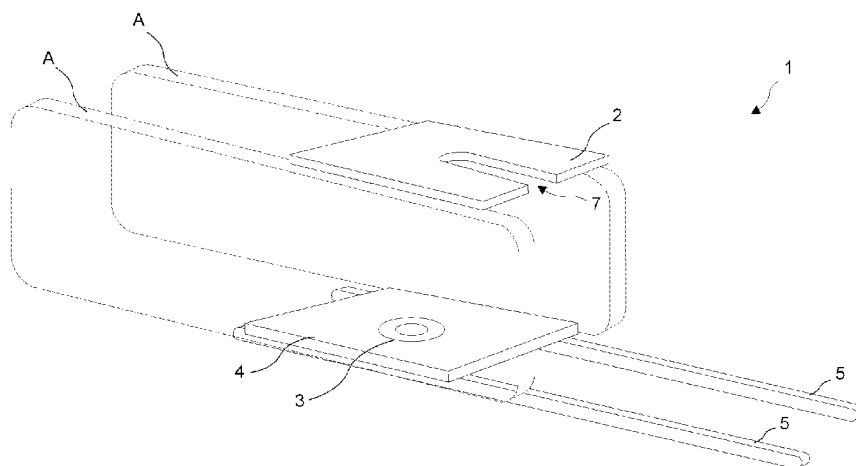
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Published:

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(54) Title: A PACKAGING MECHANISM

Figure 1



(57) Abstract: The present invention relates to a packaging mechanism (1) comprising a pallet (2) that carries the device (B), the assembly of which is completed on the assembly line (A), a platform (4) that has a telescopic arm (3) which is extended and retracted in the vertical direction, and a conveyor (5) that moves the platform (4) and the package (C) on the platform (4) in the horizontal direction.



WO 2010/076217 A1

Description**A PACKAGING MECHANISM****[0001] Technical Field**

[0002] The present invention relates to a packaging mechanism used in the production processes of television devices.

[0003] The Prior Art

[0004] During the mass production of televisions, operators or automatic machines realize one or some of the processes in the assembly of the device at every point of the production lines. The device, the assembly of which is completed, is conveyed to the packaging point on the production line in order to be packaged.

[0005] Since televisions are heavy and large devices, and sensitive against shaking and impacts, problems are encountered while they are lifted and placed into packages by the workers at the packaging point. The most important of these problems are the adverse effects on the health of the worker, and that the device is damaged or falls down in the lifting and lowering processes of the device.

[0006] In the state of the art, several mechanisms and methods used in the automatic packaging of several products are present at the end of the production processes of these products. However, these mechanisms cannot realize that sensitive electronic devices such as televisions are taken from the production line and packaged without any problems.

[0007] In the state of the art United States of America Patent Document No US5794417, an automation mechanism is explained, which realizes the products with carton packages to be packed by being disposed into a larger container. At the packaging point, products are lifted on a conveyor and aligned with an open-top box, and are disposed into the box by being pushed therein by a telescoping pushing plate that moves in the horizontal plane.

[0008] In the state of the art Canadian Patent Document No CA1299540, a mechanism for automatically packaging the products is described. The product, which is ready for packaging, is lifted by means of a moving platform and is disposed into the case, which is positioned as its bottom

flap is open.

[0009] **Brief Description of the Present Invention**

[0010] The aim of the present invention is to realize an automatic packaging mechanism wherein the electronic devices are prevented from being damaged during packaging.

[0011] The packaging mechanism realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, provides the devices, the assemblies of which are completed, to be taken from the assembly line and disposed into packages without using manpower. A telescopic arm, which ascends by being extended at the lower side of the pallet carrying the device at the end point of the assembly line, lifts the device, and the device, which is conveyed out of the assembly line by a moving line on the ground, is disposed into the package by the telescopic arm being retracted.

[0012] The device, the assembly of which is completed, comes to the packaging point on a pallet having a U-shaped opening thereon. At the packaging point, right under the pallet, a platform is located which comprises the telescopic arm in the retracted position and which carries the package wherein the device will be disposed. On the base of the package, at least one port is situated which opens towards the inside of the package.

[0013] The television device is firstly lifted from the pallet by means of the telescopic arm. For this purpose, the telescopic arm passes through the package by opening the port and is extended upward from the platform. By means of its end compatible with a housing on the bottom surface of the television device, the telescopic arm lifts the device by holding it from below. The device being moved in the horizontal direction is conveyed out of the pallet by being passed through the opening. By the telescopic arm being retracted downward in the last phase of the packaging, the device is disposed in the package and the port is closed while the telescopic arm is getting out of the package after releasing the device into the package.

[0014] **Detailed Description of the Present Invention**

[0015] The packaging mechanism realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

- [0016] Figure 1 - is the perspective view of the packaging mechanism of the present invention.
- [0017] Figure 2 - is the perspective view of the pallet.
- [0018] Figure 3 - is the perspective view of a package used by the packaging mechanism of the present invention.
- [0019] Figure 4 - is the perspective view of the platform when the telescopic arm is retracted.
- [0020] Figure 5 - is the perspective view of the platform when the telescopic arm is extended.
- [0021] Figure 6 - is the perspective view of the packaging mechanism of the present invention illustrating the position of the television device before being taken from the production line.
- [0022] Figure 7 - is the perspective view of the packaging mechanism of the present invention illustrating the position of the television device while being taken from the production line.
- [0023] Figure 8 - is the perspective view of the packaging mechanism of the present invention illustrating the position of the television device before being packaged (The front portion of the assembly line (A) is not illustrated).
- [0024] Figure 9 - is the perspective view of the packaging mechanism of the present invention illustrating the position of the television device while being packaged (The front portion of the assembly line (A) is not illustrated).
- [0025] The elements illustrated in the figures are numbered as follows:
1. Packaging mechanism
 2. Pallet
 3. Telescopic arm
 4. Platform
 5. Conveyor
 6. Port
 7. Opening
- [0026] The packaging mechanism (1) comprises a pallet (2) that carries the device (B), the assembly of which is completed on the assembly line (A),

and that has at least one opening (7), a platform (4), on which the package (C) wherein the device (B) will be disposed is placed and which has a telescopic arm (3) that is extended and retracted in the vertical direction, and a conveyor (5) which moves the platform (4) and the package (C) in the horizontal direction (Figure 1).

[0027] The packaging mechanism (1) of the present invention is situated at the packaging point wherein the devices (B), which are located at the end of the assembly line (A) and the assemblies of which are completed, will be disposed into packages (C).

[0028] The pallet (2) carries the device (B) along the assembly line (A). The pallet (2) is preferably a rectangular plane which is wider than the base of the television device (B). The pallet (2) has a U-shaped opening (7) which extends from the pallet (2) side, facing the point the assembly line (A) is over, as far as to the center of the pallet (2), and which has a width that the telescopic arm (3) can pass therethrough (Figure 2).

[0029] The telescopic arm (3) remains completely inside the platform (4) when retracted (Figure 4). The telescopic arm (3) gets out of the platform (4) and is extended upward (Figure 5). Opposite snap structures are situated at the end of the telescopic arm (3) and on the base of the television device (B). Preferably, the structure at the end of the telescopic arm (3) is shaped as a conical protrusion, and the structure under the television device (B) is shaped as a housing compatible with the conical structure. By means of the opposite snap structures, the telescopic arm (3) can carry the device (B) in a balanced manner while lifting it, and is detached from the device (B) by its end being freed from the housing while releasing the device (B) into the package (C).

[0030] The conveyor (5) consists of at least one line which is under the assembly line (A) and parallel to the assembly line (A), and which can move in both directions in the moving direction of the assembly line (A). The platform (4) and the package (C) wherein the television device (B) will be disposed are located on the conveyor (5).

[0031] The packaging process starts when the television device (B) on the pallet (2) comes to the packaging position at the end of the assembly line (A).

Meanwhile, the package (C) with open top flaps and the platform (4) carrying the package (C) are positioned under the pallet (2) such that their centers will be aligned with the center of the pallet (2) (Figure 6).

[0032] On the base of the package (C), at least one port (6) is situated which opens towards the inside of the package (C) and through which the telescopic arm (3) can pass (Figure 3). The port (6) opens upward during the extending of the telescopic arm (3) and thus, allows the telescopic arm (3) to pass through the package (C). Thus, the telescopic arm (3) extending upward ascends from the inside of the package (C) and passes towards the opening (7) on the pallet (2), and lifts the television device (B) upward from the bottom of the device (B). The contact of the device (B), which is lifted by means of the telescopic arm (3), with the pallet (2) is broken (Figure 7). Afterwards, by the conveyor (5) moving away from the assembly line (A), the platform (4), the package (C) thereon, the extended telescopic arm (3) passing through the opening (7) on the pallet (2) and the television device (B) carried by the arm (3) are taken out of the assembly line (A) (Figure 8). In the last step of the packaging process, the telescopic arm (3) is retracted towards the inside of the package (C) and thus, places the device (B) thereon into the package (C) (Figure 9). The port (6) closes during the retracting of the telescopic arm (3) when the telescopic arm (3) is retracted by passing through the package (C). Before the next packaging process, empty packages (C) wherein the devices (B), the assemblies of which are completed, will be disposed, the platform (4) and the retracted telescopic arm (3) are conveyed towards the assembly line (A) by means of the conveyor (5) such that they will be aligned with the pallet (2).

[0033] By means of the abovementioned packaging mechanism (1), the television devices (B), the assemblies of which are completed, are packaged without the need for an additional manpower. Furthermore, since the devices (B) are disposed into a package (C), the bottom flaps of which are closed, the process of closing the bottom flaps during packaging is eliminated.

Claims

1. A packaging mechanism (1) **comprising**
 - a pallet (2) that carries the device (B), the assembly of which is completed,
 - a platform (4) whereon the package (C), in which the device (B) will be disposed, is disposed; and which has a telescopic arm (3) that is extended and retracted in the vertical direction, and
 - a conveyor (5) which moves the platform (4) and the package (C) in the horizontal direction;**characterized by**
 - the pallet (2) that has a U-shaped opening (7) which extends from the pallet (2) side, facing the point the assembly line (A) is over, as far as to the center of the pallet (2), and which has a width that the telescopic arm (3) can pass therethrough, and
 - the platform (4) that has a telescopic arm (3) which passes through the opening (7) and lifts the device (B) by supporting it from bottom.
2. A packaging mechanism (1) as in Claim 1, **characterized by** the telescopic arm (3) which remains completely inside the platform (4) when retracted, and which, during the extending, passes through a port (6) that is located on the base of the package (C) and opened towards the inside of the package (C), and thus, which is extended upward from the inside of the package (C).
3. A packaging mechanism (1) as in Claim 1 or Claim 2, **characterized by** the telescopic arm (3) which, at its end, has a snap structure compatible with a housing on the base of the device (B).
4. A packaging mechanism (1) as in any one of the above Claims, **characterized by** the conveyor (5) that consists of at least one line which is under the assembly line (A) and parallel to the assembly line (A), and which can move in both directions in the moving direction of the assembly line (A); and that conveys the platform (4), the empty package (C) on the platform (4), the extended telescopic arm (3) and the television device (B) on the telescopic arm (3) out of the assembly line (A).

Figure 1

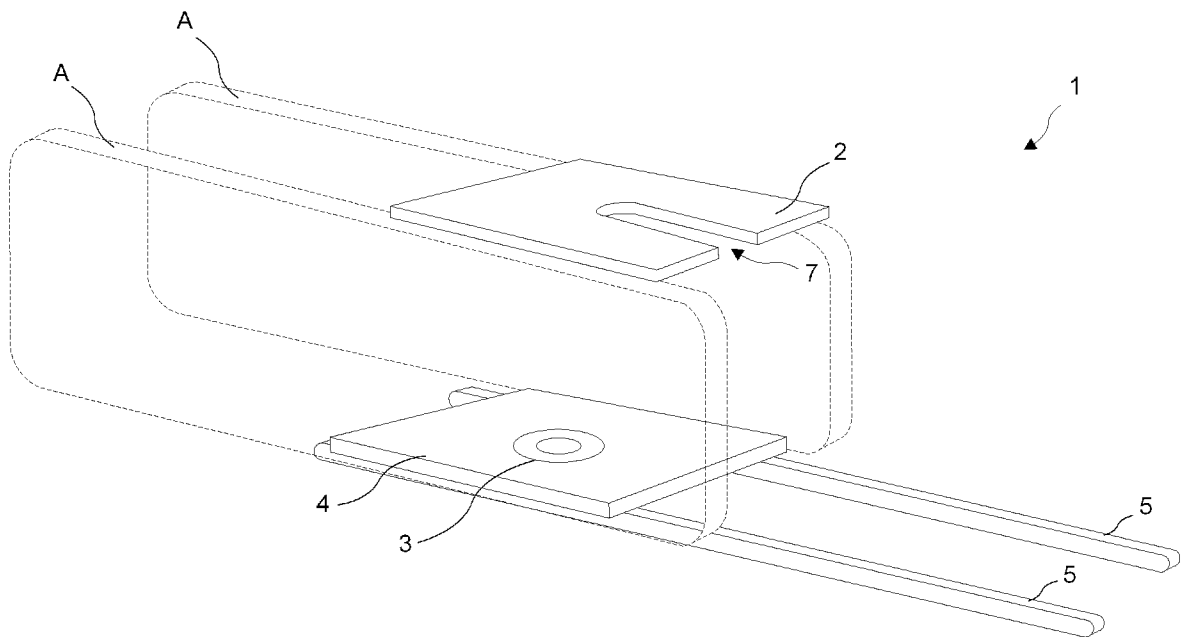


Figure 2

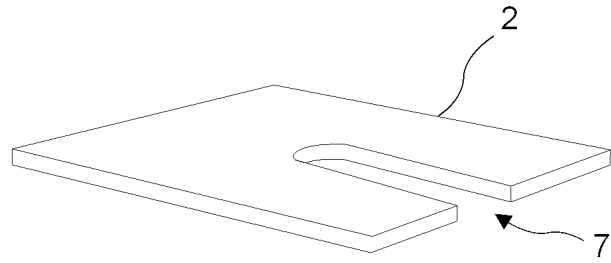


Figure 3

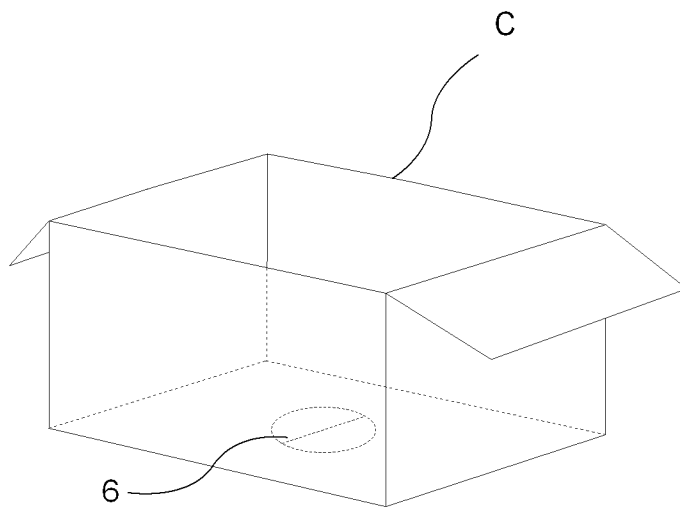


Figure 4

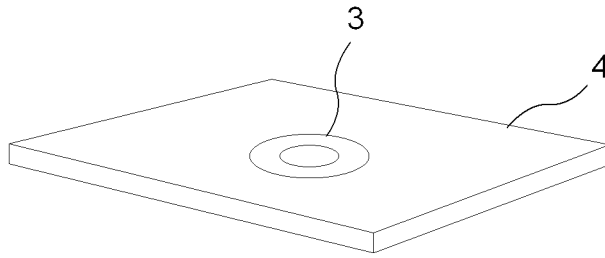


Figure 5

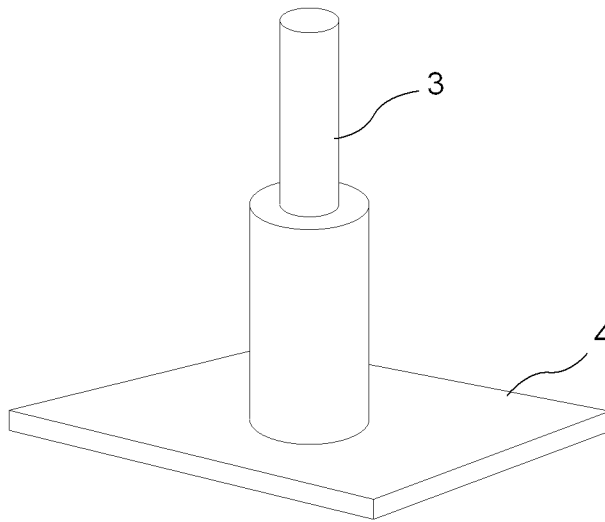


Figure 6

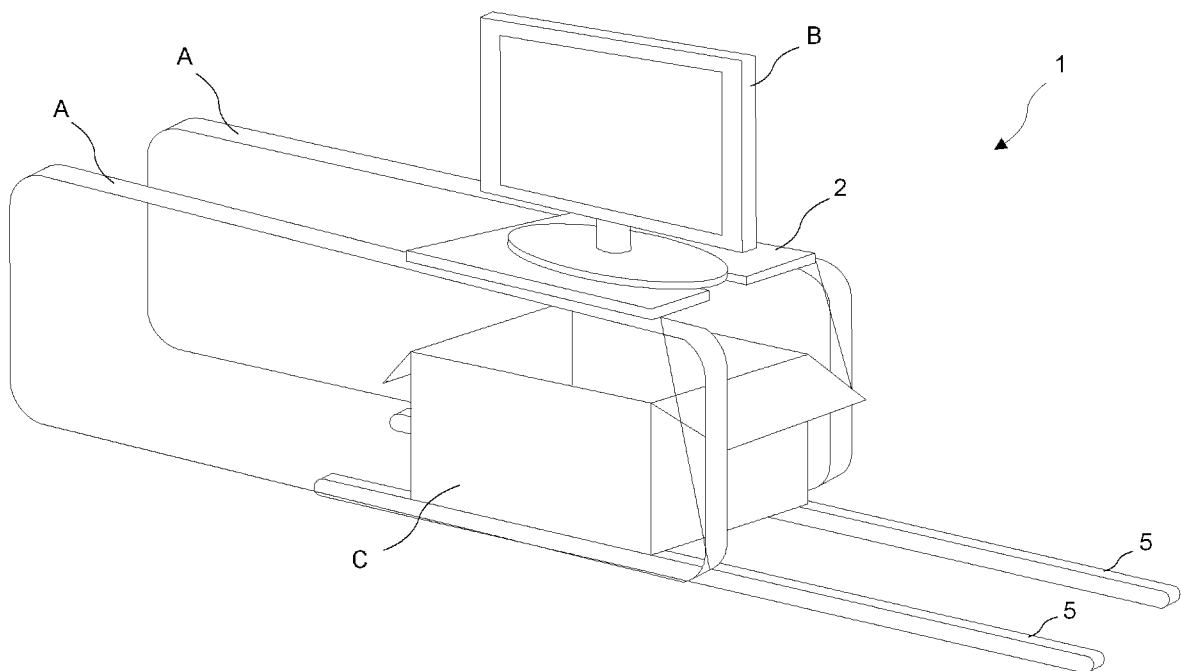


Figure 7

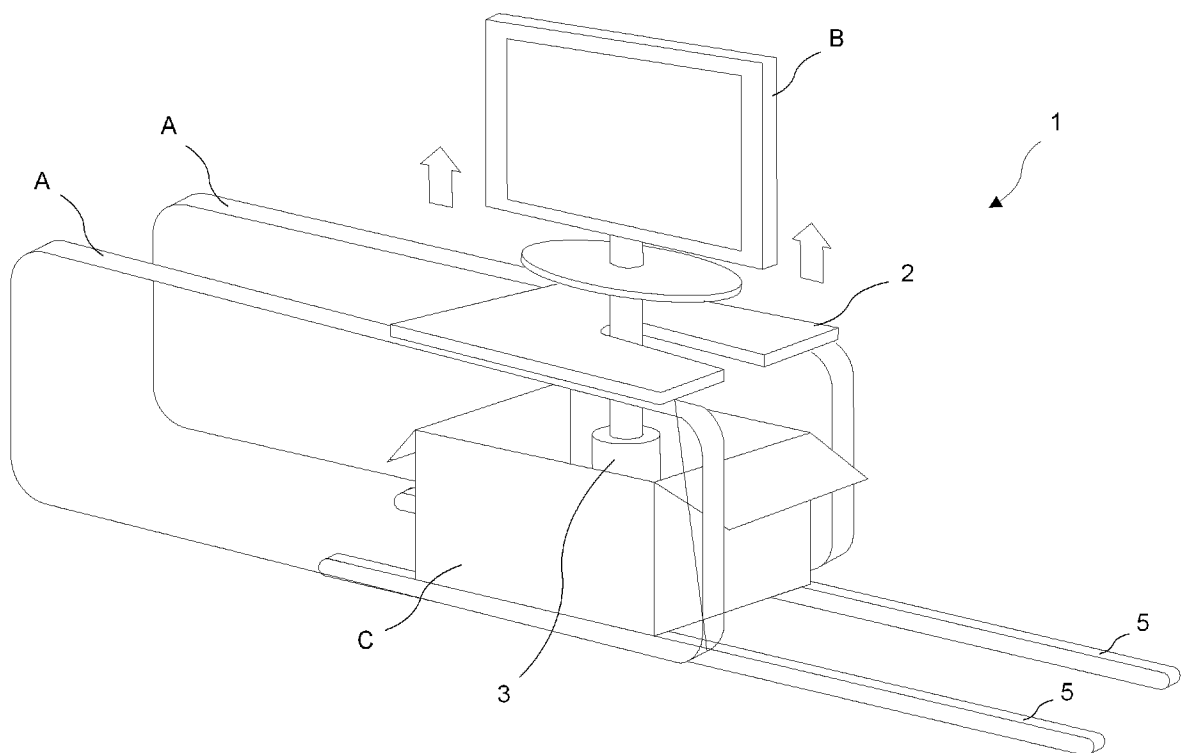


Figure 8

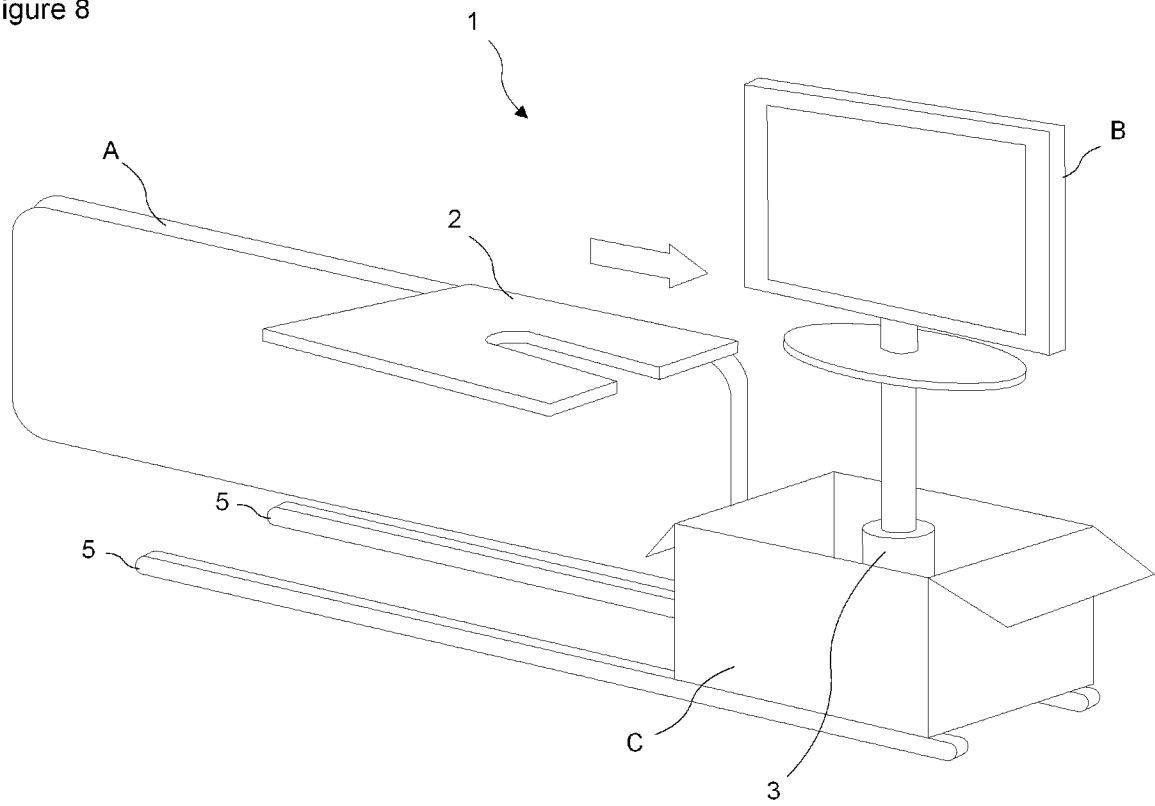
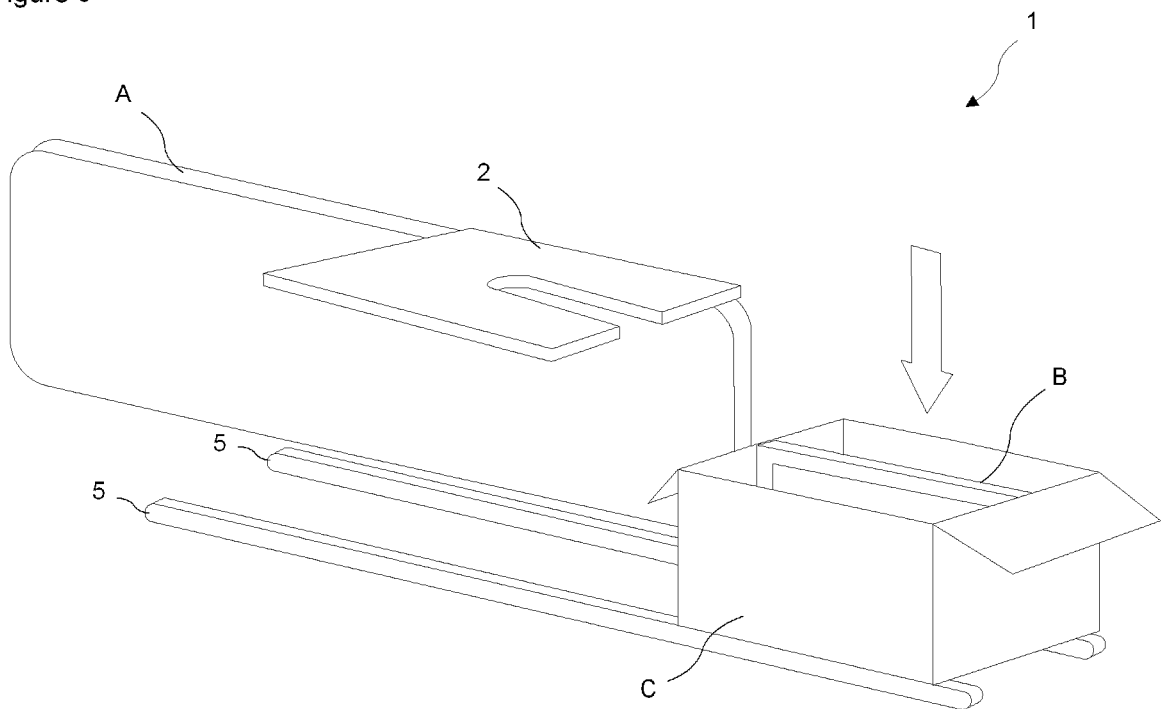


Figure 9



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/067278

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65B5/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 595 320 A1 (EMBALLAGE CARTON SA [FR]) 11 September 1987 (1987-09-11) page 10, line 32 - page 11, line 14; figures 6-9	1-4
A	GB 2 197 841 A (BOWATER PACKAGING LTD) 2 June 1988 (1988-06-02) the whole document	1-4

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
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- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

26 March 2010

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2009/067278

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2595320	A1	11-09-1987	NONE	
GB 2197841	A	02-06-1988	NONE	