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• **Romani, Daniele**
39100 Bolzano (IT)

(72) Inventors:
• **Klotzner, Stefan**
39100 Bolzano (IT)
• **Romani, Daniele**
39100 Bolzano (IT)

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(74) Representative: **Statti, Francesco**
Isea S.R.L.
Via G. Carducci, 6
62012 Civitanova Marche (IT)

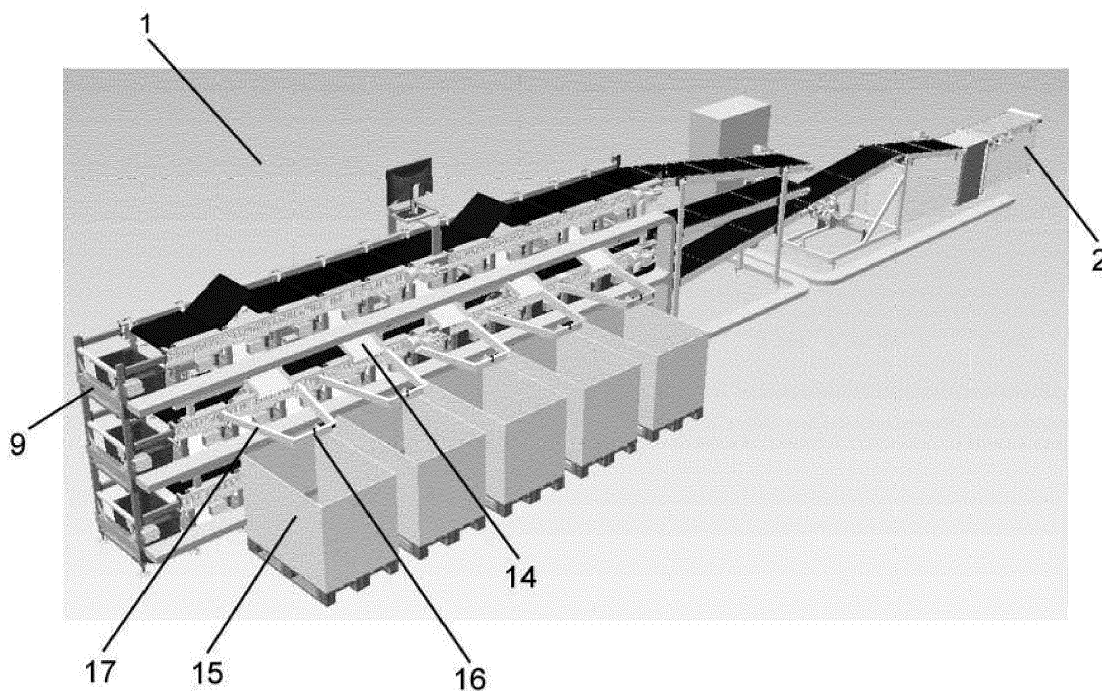
(71) Applicants:
• **Klotzner, Stefan**
39100 Bolzano (IT)

(54) **SYSTEM FOR THE DISTRIBUTION, AUTOMATIC PACKAGING AND RETURN OF PUBLISHING PRODUCTS**

(57) This invention relates to the publishing sector and, more specifically, regards the use of a system for the distribution of periodicals and newspapers to process

daily returns in such a way as to combine both processes in a single system with cost and space savings.

Fig. 1



Description

Field of the invention

[0001] This invention relates to the publishing sector and, more specifically, regards the use of a system for the distribution of periodicals and newspapers to process daily returns in such a way as to combine both processes in a single system with cost and space savings.

Background of the invention

[0002] It is known in the state of the art that, for the distribution of publishing products, publishers make use of specific distribution agencies located in determined areas of the country and that the packaging of publishing products to be delivered to the individual resellers is performed manually. To overcome this problem of the state of the art, there is patent application No. AN2015A000058 in the name of the same applicants, which discloses a system for the automatic packaging and distribution of periodicals and newspapers for each individual reseller consisting of: an input module M, a scale B, a division module for portions formed from five conveyor belts, a sorting module formed from three lines of pivoting sorters Sm1, Sm2, Sm3 each with twelve outputs, a central management personal computer, a system with programmable control logic and finally a central computer system. Said system has the purpose of automating the packaging of each publishing product to be delivered to the individual resellers.

[0003] It is also known that unsold publishing products are returned to the respective publishers through redelivery to the distribution agencies of competence, which must calculate, for each reseller, the number of copies of each publishing product returned, crediting it for the related amount.

[0004] Currently all these operations are performed automatically by machines, called "return machines", which have an input belt on which the publishing products to be returned, identified beforehand with a bar code, are individually placed and spaced apart to be inserted in a module that reads their codes, by means of which they are identified and credited to each individual reseller and sorted by publisher by means of additional known tools with which current publishing product return systems are equipped.

[0005] It follows that, for the step of returning and crediting unsold publishing products from the individual resellers to the agencies and from these to the publishers, there are systems that allow the complete automation of said operations, such as the system disclosed in patent application AN2015A000058, which allows automating the distribution process.

[0006] These two operations are thus handled by two different systems and therefore require a lot of space to house them both with consequent very high costs.

[0007] At the state of the art, there is no known system

that simultaneously allows performing both distribution and return operations.

Disclosure of the invention

[0008] The purpose of this invention is to overcome the above-described drawbacks by providing a single system that is able to perform both distribution and return operations at the same time.

[0009] Another purpose of this invention is to provide a single distribution-return system that uses less space than would be required in the case of two distinct systems.

[0010] Another purpose of this invention is to provide a single distribution-return system that costs less to produce.

[0011] Further characteristics and advantages of the invention will become apparent from the description of a preferred, but not exclusive, embodiment of the system for the distribution, packaging and automatic return of periodicals and newspapers covered by this patent application, illustrated by way of nonlimiting indication in the accompanying drawings in which:

- Fig. 1 is an axonometric view of a periodical and newspaper distribution system (1) suitable to process returns and thus implemented with the following components:
 - a sensor (not shown) placed between an input module M (2) and a scale B (3);
 - trays (14);
 - bins or pallboxes (15);
 - sensors (16);
 - a support plate (17) of the sensor (16)
- Fig. 2 is a further axonometric view of the distribution system (1) suitable to process returns of Fig. 1;
- Fig. 3 is an axonometric view different from the preceding two of the distribution system (1) suitable to process returns of Fig. 1;
- Fig. 4 is a view from above of the distribution system (1) suitable to process returns of Fig. 1;
- Fig. 5 is a side view of the distribution system (1) suitable to process returns in which one can see that the tray (14) is positioned horizontally;
- Fig. 6 is a side view of the distribution system (1) suitable to process returns in which one can see that the tray (14) is positioned at 45° to facilitate the fall of the publications into the bins or pallboxes (15).

Detailed description of the Invention

[0012] According to a preferred - but not limiting - embodiment, this invention concerns the use of a system (1) for the distribution of periodicals and newspapers known and implemented through a series of components in order to perform the daily return function in addition to

the distribution function. The system (1) for the distribution and the automatic packaging of periodicals and newspapers disclosed in patent application No. AN2015A000058 is composed of:

- an input module M (2);
- a scale B (3);
- a division module for portions formed by five conveyor belts:
 - first conveyor belt N1 (4);
 - second pivoting conveyor belt N2 (5);
 - third conveyor belt N3 (6);
 - fourth conveyor belt N4 (7);
 - fifth conveyor belt N5 (8);
- a sorting unit formed from three lines of pivoting sorters Sm1, Sm2, Sm3 each having twelve outputs or boxes:
 - first line of sorters Sm1 (9);
 - second line of sorters Sm2 (10);
 - third line of sorters Sm3 (11);
- a central management personal computer (not shown);
- a programmable logic control system (not shown);
- a central computer system (not shown);

[0013] So that said known system (1) can also be used for returns, it must be equipped with:

- a sensor (not shown), for example a camera system or a scanner positioned between the input module M (2) and a scale B (3) and having the function of recognizing the bar code and thus the publication;
- trays (14) positioned in an alternating fashion with respect to the twelve outputs of the first line of sorters Sm1 (9);
- bins or pallboxes (15) positioned in correspondence of each of the trays (14);
- a sensor (16) having the function of checking the capacity of the bin or pallbox (15);
- a support plate (17) of the sensor (16) of the capacity of the bin or pallbox (15);

[0014] The system (1), implemented with the above components, provides the possibility of combining the two processes with great savings of cost and space since there is no longer the need to invest in the production of two different systems and there is no longer a need for large spaces for two different systems.

[0015] Said system (1) implemented for returns provides the possibility of carrying out much more detailed divisions of publications with a number of outputs of the sorting lines depending on the needs of the user.

[0016] The outputs or boxes of each line of sorters Sm1 (9), Sm2 (10), Sm3 (11) are uniquely identified by a plain-

text label containing the progressive number of each box in a suitable position.

[0017] In the known embodiment of the system (1) there are twelve outputs or boxes for each line of sorters Sm1 (9), Sm2 (10), Sm3 (11) but in a further embodiment of the system (1) there can be a greater number of outputs.

[0018] The system with programmable control logic must know the box-reseller pair as decided by the distribution manager.

[0019] In order to use the distribution system for returns, only one line of sorters Sm1 (9) is used.

[0020] After reading the bar code and recognizing the publication, the sensor (not shown) positioned between the input module M (2) and a scale B (3) will send it to the destination box.

[0021] Alternatively, the boxes will be equipped with trays (14) that, during the distribution operation will be horizontal and will form the support base of the box in which the publications to be distributed to each reseller will be collected, while during the return operation, they will be inclined 45°, and will have the function of a slide. The movement of said trays (14) will take place by means of pistons (not shown) controlled by the programmable control logic system (not shown).

[0022] At the side of the system, in correspondence of each tray (14), bins or pallboxes (15) will be positioned into which the publications to be returned to the respective publishers will fall.

[0023] The trays (14), being able to vary their position from horizontal to 45° will therefore be pivoting and when the publication is conveyed on the tray (14), it will fall into the bin or pallbox (15) positioned below it.

[0024] In the return processing step, the boxes will not have to be present on the outputs and the speeds from the input module M (2) to the first line of sorters Sm1 (9) will be increased electronically in a progressive manner. This increase in speeds is due to the fact that distribution takes place in bundles of magazines while returns are single copies for which the speeds of the conveyor belts should be increased to provide the possibility of spacing out the copies. The speed between the input module M (2) and the first line of sorters Sm1 (9) is comprised in a range of 30-90 m/min.

[0025] Unlike the state of the art, in this patent application there is no need for additional conveyor belts or rollers to carry away the returns.

[0026] The materials and dimensions of the invention as above described, illustrated in the accompanying drawings and claimed below, may be any depending on the need. Moreover all details are replaceable with other technically equivalent ones, without departing from the scope of this patent application.

Claims

1. System (1) for the distribution, automatic packaging

and return of publishing products comprising:

- an input module M (2);
- a scale B (3) ;
- a division module for portions formed by five conveyor belts: 5

- first conveyor belt N1 (4);
- second pivoting conveyor belt N2 (5);
- third conveyor belt N3 (6); 10
- fourth conveyor belt N4 (7);
- fifth conveyor belt N5 (8);

- a sorting unit formed from three lines of pivoting sorters Sm1, Sm2, Sm3 each having twelve outputs or boxes: 15

- first line of sorters Sm1 (9);
- second line of sorters Sm2 (10);
- third line of sorters Sm3 (11); 20

- a central management personal computer;
- a programmable logic control system;
- a central computer system; 25

characterized in that it is implemented with the following components in order to perform the daily return function of publishing products:

- a sensor positioned between the input module M (2) and a scale B (3) and capable of recognizing the bar code and thus the publication; 30
- trays (14) positioned in an alternating fashion with respect to the twelve outputs of the first line of sorters Sm1 (9); 35
- bins or pallboxes (15) positioned to the side of the system (1) and in correspondence of each of the trays (14) and inside which fall the publications being returned;
- a sensor (16) having the function of checking the capacity of the bin or pallbox (15); 40
- a support plate (17) of the sensor (16).

2. System (1) according to claim 1 **characterized in that**, during distribution, the trays (14) are horizontal and constitute the support base of the boxes in which the publications are collected and, during return, are inclined at 45° and act as a slide for them. 45
3. System (1) according to claim 1 and 2 **characterized in that**, during return, the publication collection boxes are not present on the trays (14). 50
4. System (1) according to claim 1, **characterized in that**, for return, the line of sorters Sm1 (9) is used. 55
5. System (1) according to claim 1 **characterized in that** the speeds from the input module M (2) to the

first line of sorters Sm1 (9) are electronically increased in a progressive manner and are comprised in a range of 30-90 m/min.

Fig. 1

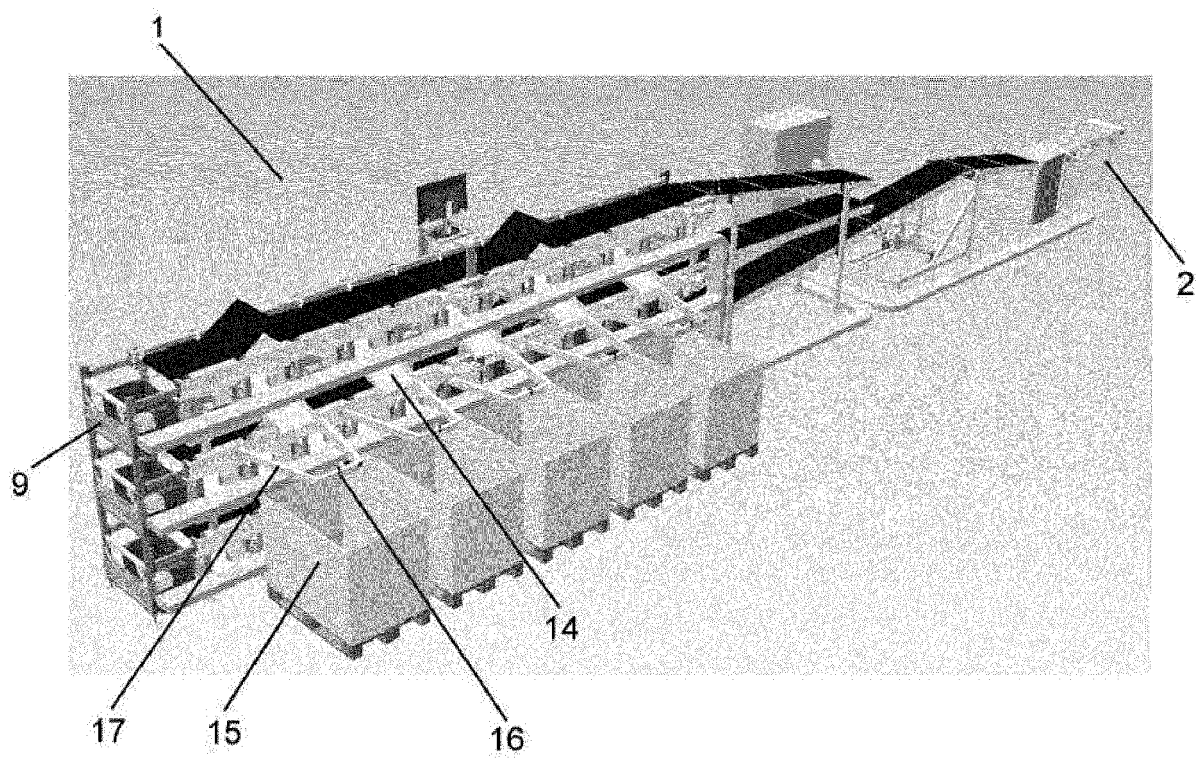


Fig. 2

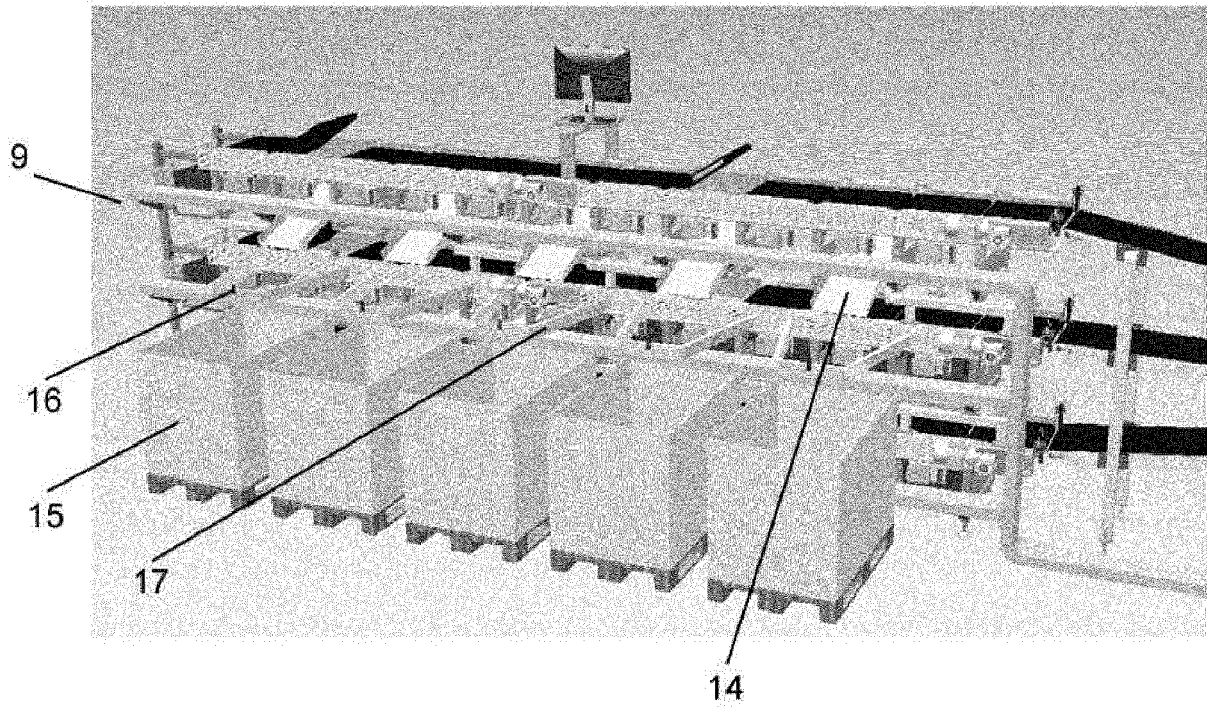


Fig. 3

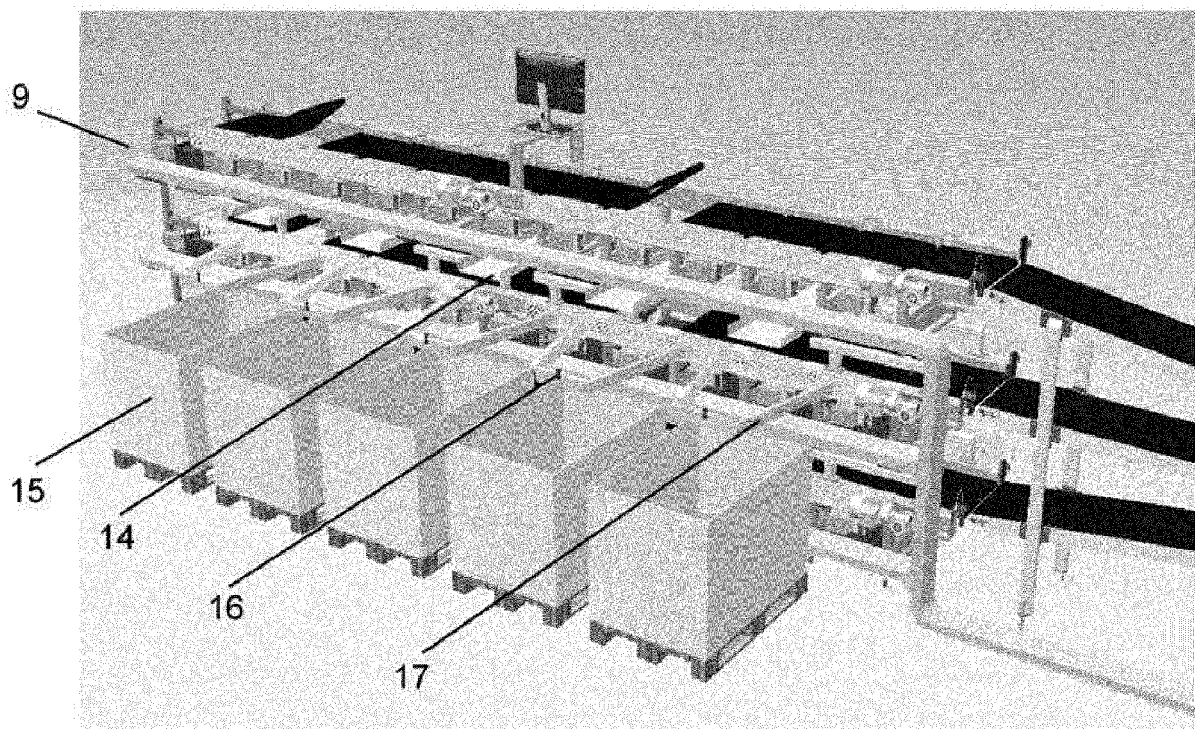


Fig. 4

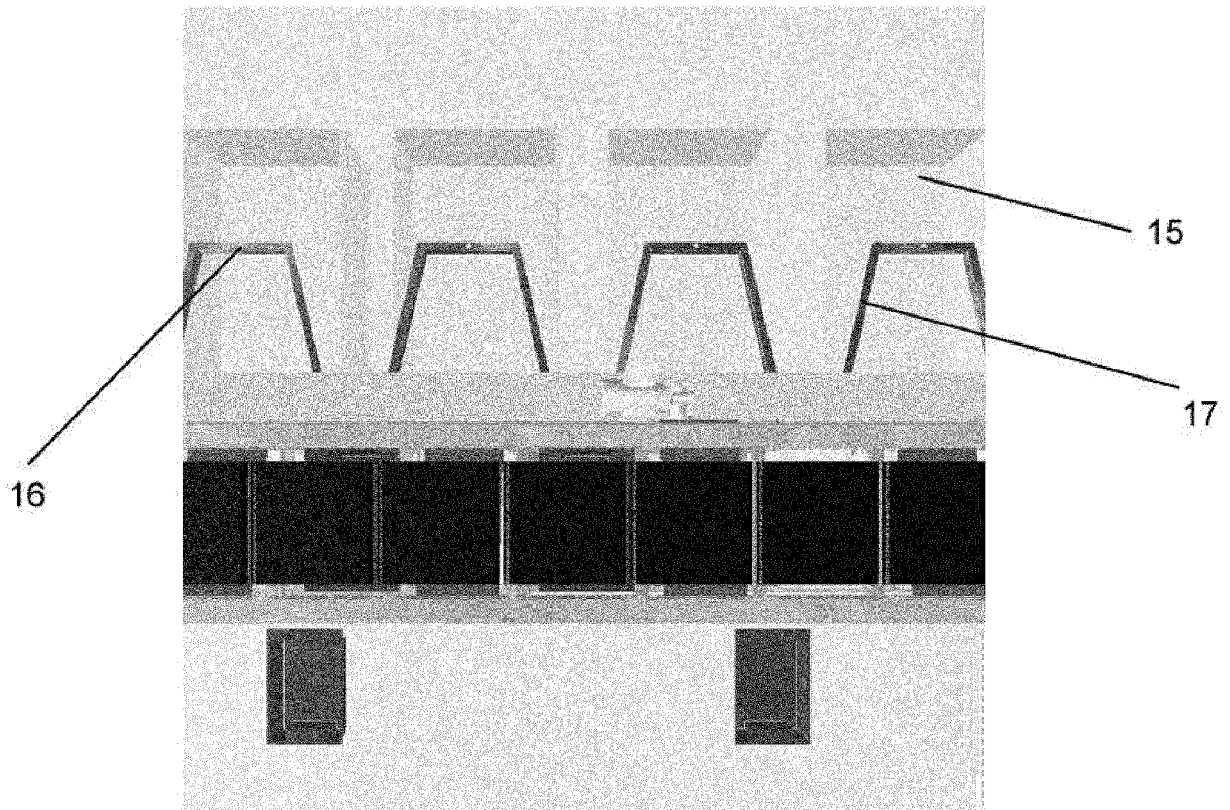


Fig. 5

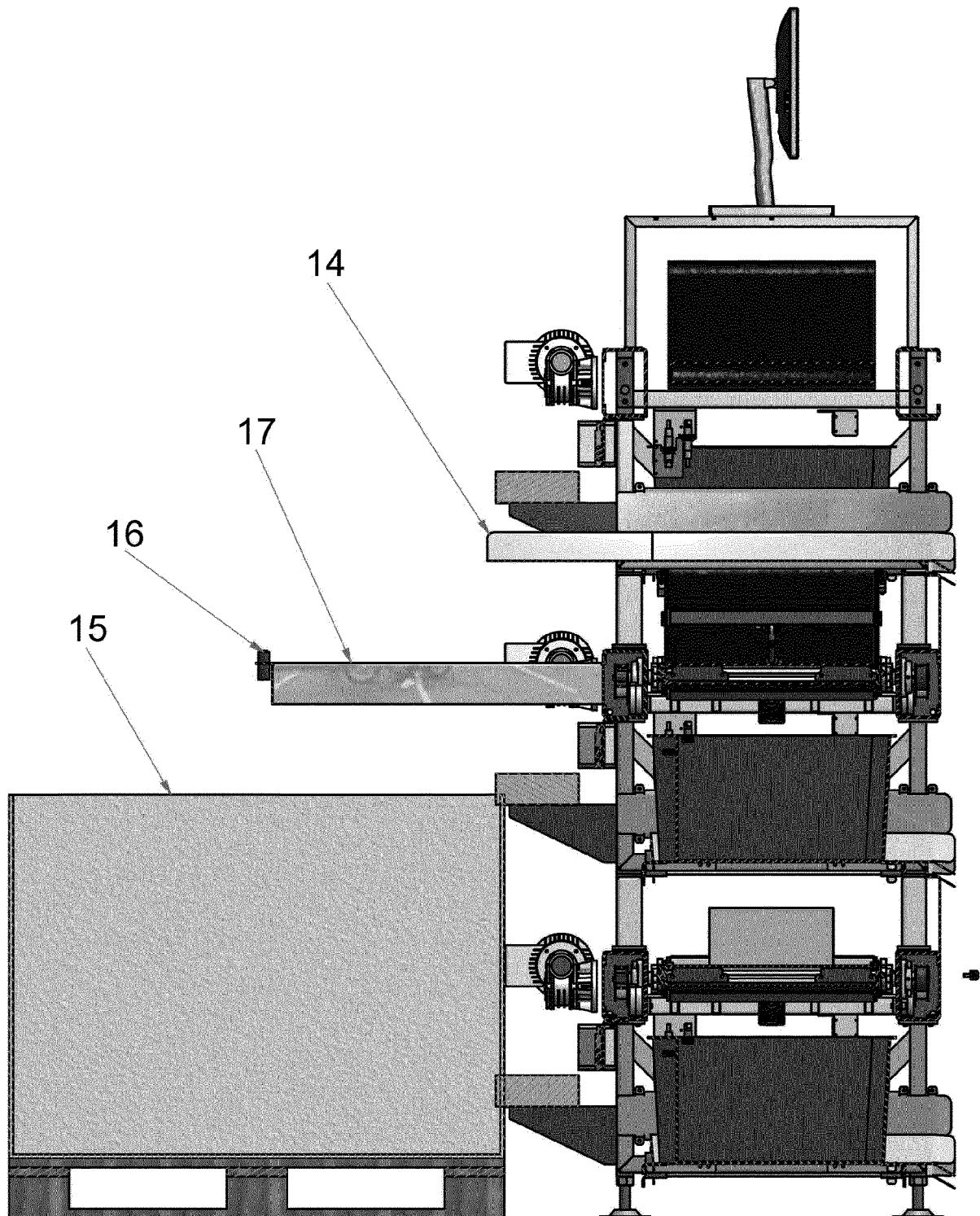
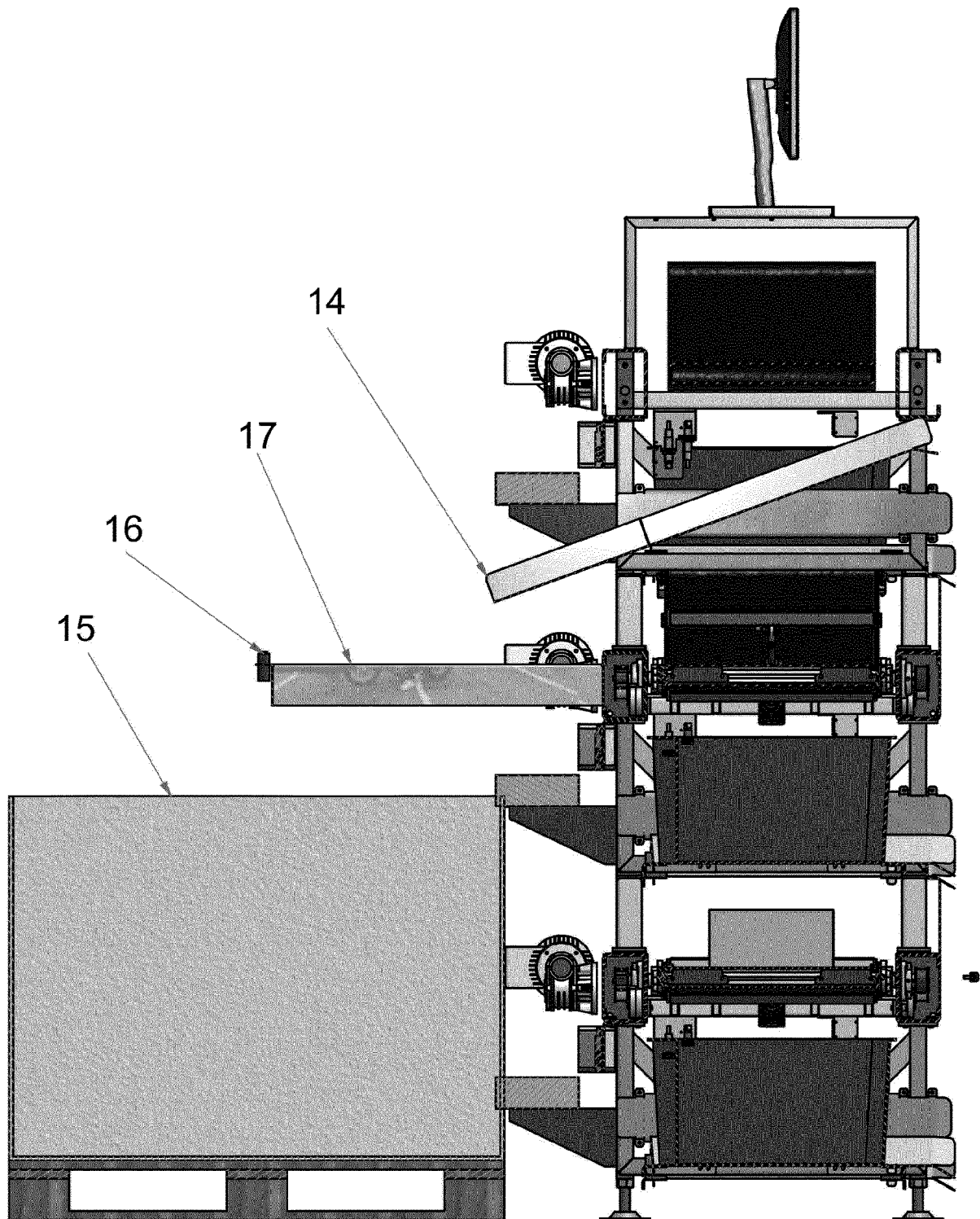


Fig. 6





EUROPEAN SEARCH REPORT

Application Number
EP 16 02 0303

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 December 2016	Examiner Wich, Roland
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 16 02 0303

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REFERENCES CITED IN THE DESCRIPTION

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