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

SYSTEM ZUM VERTEILEN, AUTOMATISCHEN VERPACKEN UND ZUM RÜCKSENDEN VON VERLAGSPRODUKTEN

SYSTÈME DE DISTRIBUTION, EMBALLAGE AUTOMATIQUE ET RETOUR DE PRODUITS DE PUBLICATION

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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 (EP-A-3 088 340) 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 (EP 3 088 240), 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. At the state of the art, there is no known system that simulta-

neously allows performing both distribution and return operations.

[0007] In the state of the art the document EP0450723 (A2) is known, that discloses a machine for sorting graphic and/or printing products in which the products are fed one after the other, comprising a framework, a conveyor for receiving individual products one after the other, sensors for identifying each of the individual products on the receiving conveyor, a central computer, a control console for the entry of predetermined data, selectively actuated elements for unloading the products from the receiving conveyor and at least one conveyor for discharging the unloaded products.

15 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 (2) and a scale;
 - 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 (EP 3 088 340) 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 (2) and a scale 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 (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.

10 **[0016]** The outputs or boxes of each line of sorters (9) 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 (9) 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.

20 **[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 (2) and a scale will send it to the destination box.

25 **[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).

35 **[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 (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 (2) and the first line of sorters (9) is comprised in a range of 30-90 m/min.

50 **[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 (2);
- a scale;
- a division module for portions formed by five conveyor belts:

- first conveyor belt;
- second pivoting conveyor belt;
- third conveyor belt;
- fourth conveyor belt;
- fifth conveyor belt;

- a sorting unit formed from three lines of pivoting sorters each having twelve outputs or boxes:

- first line of sorters (9);
- second line of sorters;
- third line of sorters;

- a central management personal computer;

- a programmable logic control system;

- a central computer system;

wherein 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 (2) and a scale and capable 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 (9);
- 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);
- 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.

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).

4. System (1) according to claim 1, **characterized in that**, for return, the line of sorters (9) is used.

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.

Patentansprüche

1. System (1) zur Verteilung, automatischen Verpackung und Rückgabe von Verlagsprodukten, umfassend:

- ein Eingangsmodul (2);
- eine Waage;
- ein Unterteilungsmodul für Teile, das aus fünf Förderbändern besteht:

- erstes Förderband;
- zweites rotierendes Förderband;
- drittes Förderband;
- viertes Förderband;
- fünftes Förderband;

- eine Auswahleinheit bestehend aus drei Reihen rotierender Sortierer mit jeweils zwölf Ausgängen oder Kästen:

- eine erste Reihe von Sortierern (9);
- eine zweite Reihe von Sortierern;
- eine dritte Reihe von Sortierern;

- ein zentraler Personalverwaltungsrechner;

- ein programmierbares Logiksteuersystem;

- ein zentrales Computersystem;

wobei die Ausführung mit folgenden Komponenten erfolgt, um die tägliche Funktion der Rücksendung von Verlagsprodukten zu erfüllen:

- einem Sensor, der zwischen dem Eingangsmodul (2) und einer Waage positioniert ist und den Barcode und damit die Publikation erkennen kann;
- Tablett (14), die abwechselnd in Bezug auf die zwölf Ausgänge der ersten Reihe von Sortierern (9) positioniert sind;
- Behältern oder Paletten-Boxen (15), die an der Seite des Systems (1) positioniert und mit jedem der Tablett (14) übereinstimmen, in die die zurückgegebenen Verlagsprodukte fallen;
- einem Sensor (16) mit der Funktion, das Fas-

- sungsvermögen der Behälter oder der Paletten-Boxen (15) zu überprüfen ;
- einer Trägerplatte (17) des Sensors (16).
2. System (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Tablett (14) während des Verteilens waagrecht sind und den Stützboden der Boxen bilden, in denen die Verlagsprodukte gesammelt werden, und während der Rückgabe um 45° geneigt sind, wobei sie für diese als Rutsche wirken. 5 10
3. System (1) nach Anspruch 1 oder 2 **dadurch gekennzeichnet, dass** bei der Rückgabe die Sammelboxen der Verlagsprodukte nicht auf den Tablett (14) vorhanden sind. 15
4. System (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** für die Rückgabe die Linie der Sortierer (9) verwendet wird. 20
5. System (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Geschwindigkeiten vom Eingangsmodul M (2) zur ersten Sortierreihe Sm1 (9) schrittweise elektronisch erhöht werden und liegen in einem Bereich zwischen 30 und 90 m/min. 25

Revendications

1. Système (1) de distribution, emballage automatique et retour de produits éditoriaux comprenant: 30
- un module d'entrée (2);
 - une balance ;
 - un module de division pour pièces composé de cinq bandes transporteuses: 35
 - une première bande transporteuse ;
 - une deuxième bande transporteuse pivotante ; 40
 - une troisième bande transporteuse ;
 - une quatrième bande transporteuse ;
 - une cinquième bande transporteuse ;
 - une unité de sélection composée de trois lignes de sélecteurs pivotants, chacune équipée de douze sorties ou conteneurs : 45
 - une première ligne de sélecteurs (9) ;
 - une deuxième ligne de sélecteurs ; 50
 - une troisième ligne de sélecteurs ;
 - un ordinateur central de gestion du personnel ;
 - un système de contrôle logique programmable ; 55
 - un système informatique central ;

où l'exécution a lieu avec les composants suivants

afin d'effectuer la fonction quotidienne de retour de produits éditoriaux:

- un capteur placé entre le module d'entrée (2) et une balance et capable de reconnaître le code à barres et donc la publication ;
 - des plateaux (14) positionnés alternativement par rapport aux douze sorties de la première ligne de sélecteurs (9) ;
 - des conteneurs ou des bacs à palettes (15) placés sur le côté du système (1) et en correspondance avec chacun des plateaux (14) dans lesquels tombent les publications renvoyées;
 - un capteur (16) ayant pour fonction de vérifier la capacité du conteneur ou du bac à palette (15) ;
 - une plaque de support (17) du capteur (16).
2. Système (1) selon la revendication 1, **caractérisé en ce que** lors de la distribution les plateaux (14) sont horizontaux et constituent la base de support des conteneurs dans lesquels sont rassemblées les publications, et lors de la restitution ils sont inclinées de 45° faisant en agissant comme des glissières pour celles-ci.
3. Système (1) selon la revendication 1 ou 2 **caractérisé en ce que**, lors du retour, les bacs de collecte des publications ne sont pas présentes sur les plateaux (14).
4. Système selon la revendication 1, **caractérisé en ce que** lors du retour, la ligne des sélecteurs (9) est utilisée.
5. Système (1) selon la revendication 1, **caractérisé en ce que** les vitesses du module d'entrée M (2) à la première ligne de sélecteurs Sm1 (9) sont augmentés électroniquement de manière progressive et sont compris dans un intervalle compris entre 30 et 90 m/min.

Fig. 1

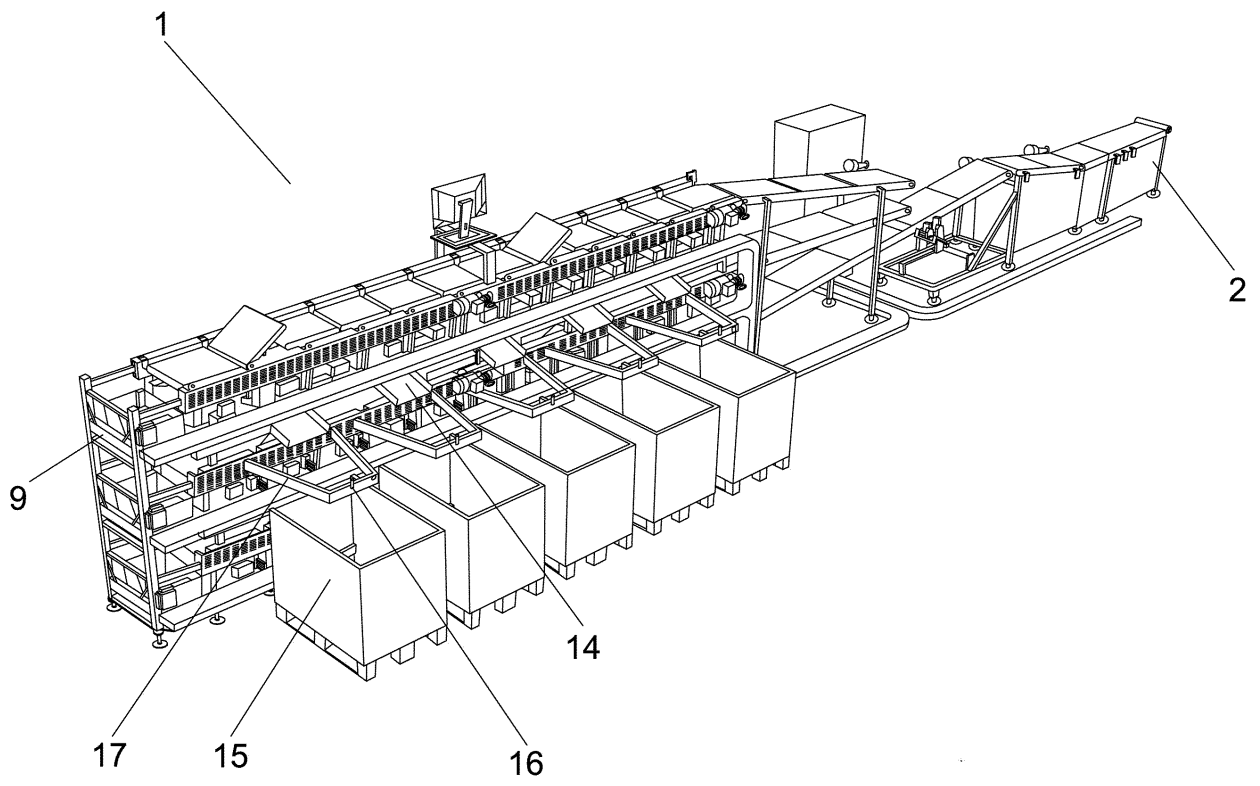


Fig. 2

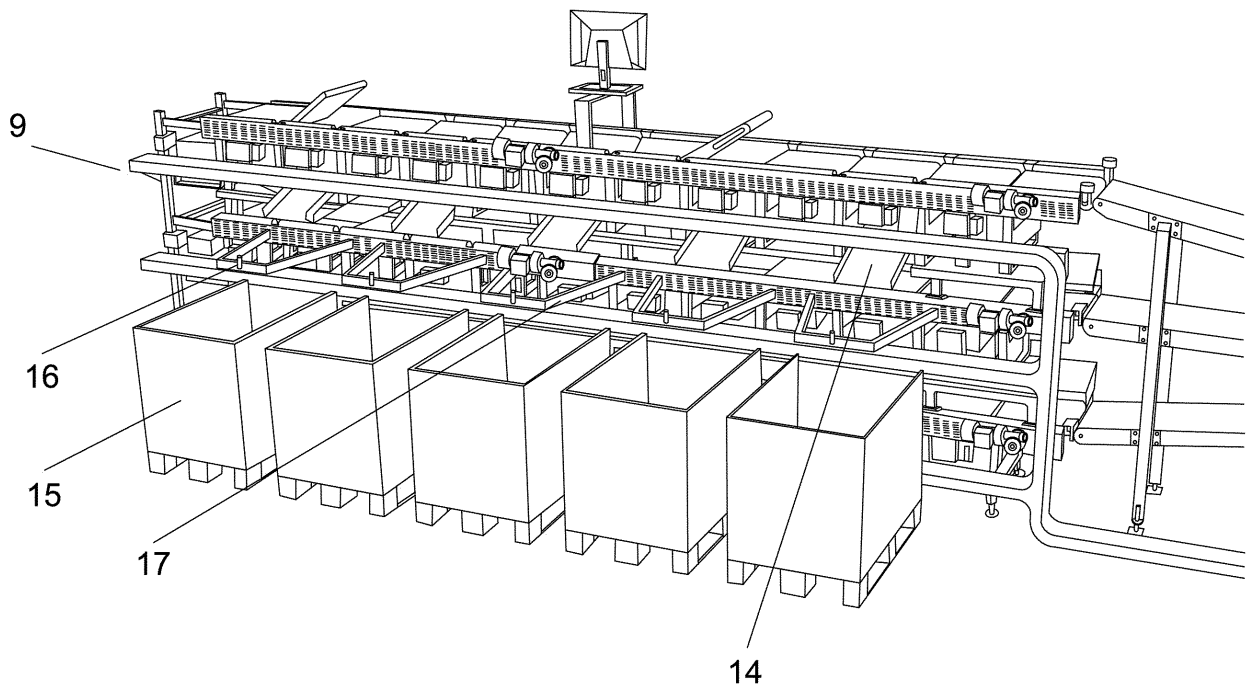


Fig. 3

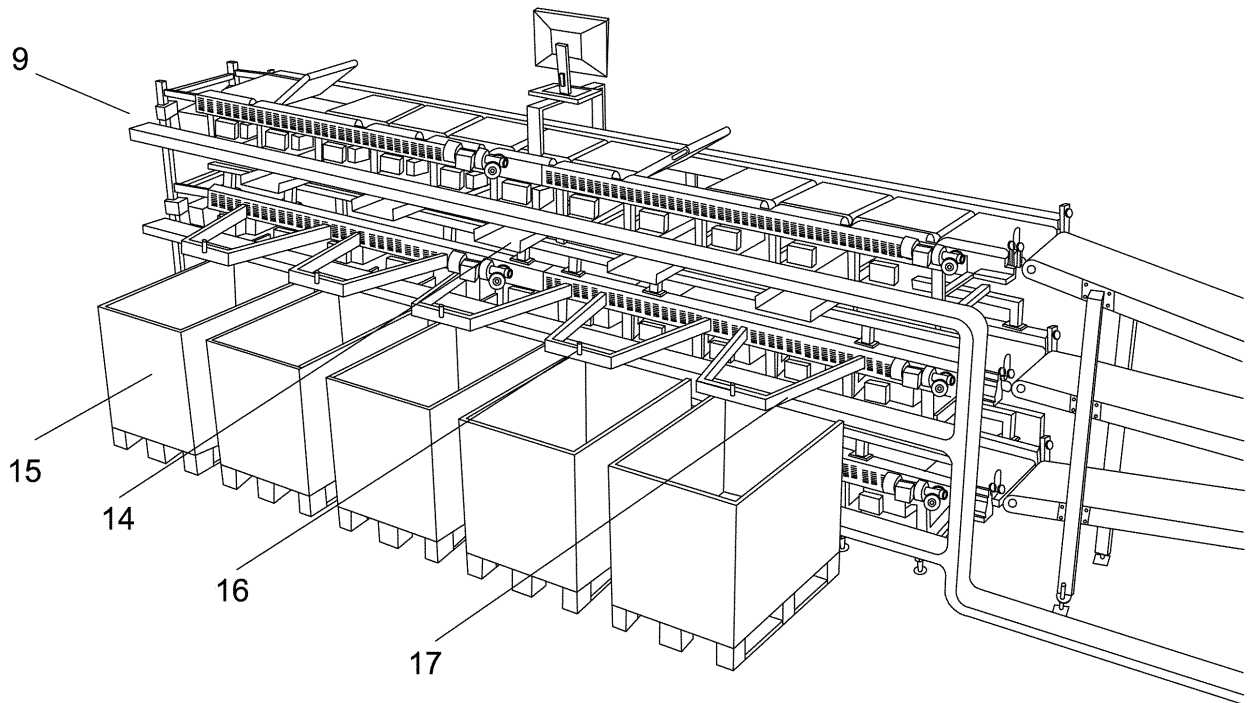


Fig. 4

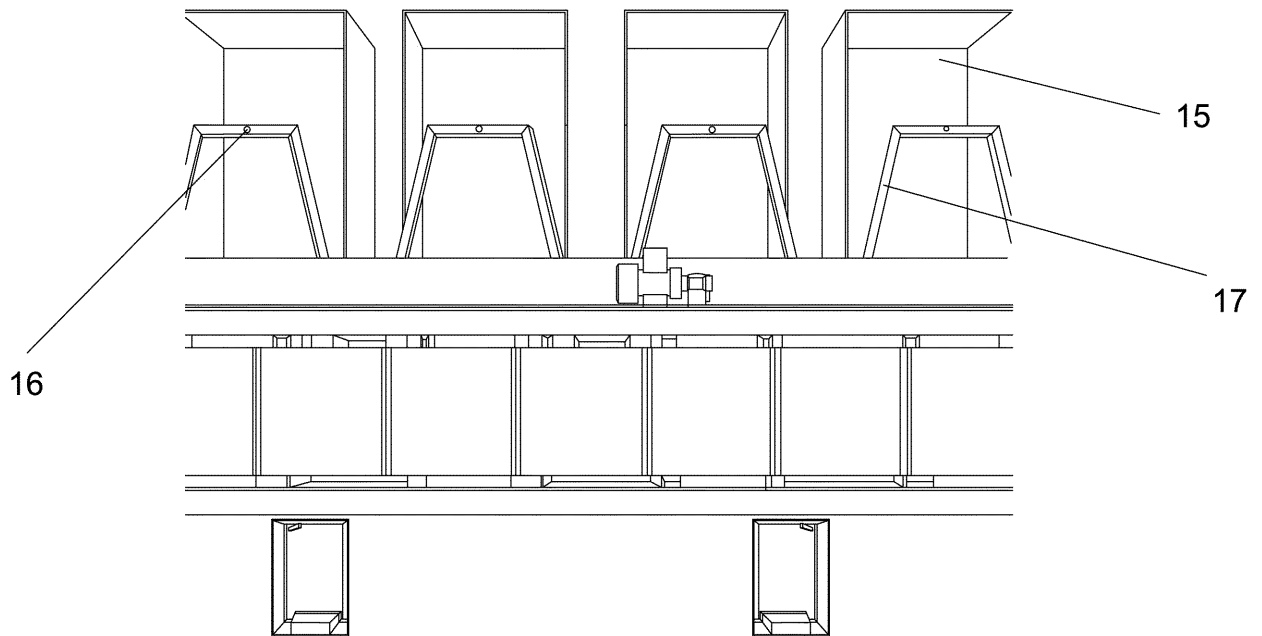


Fig. 5

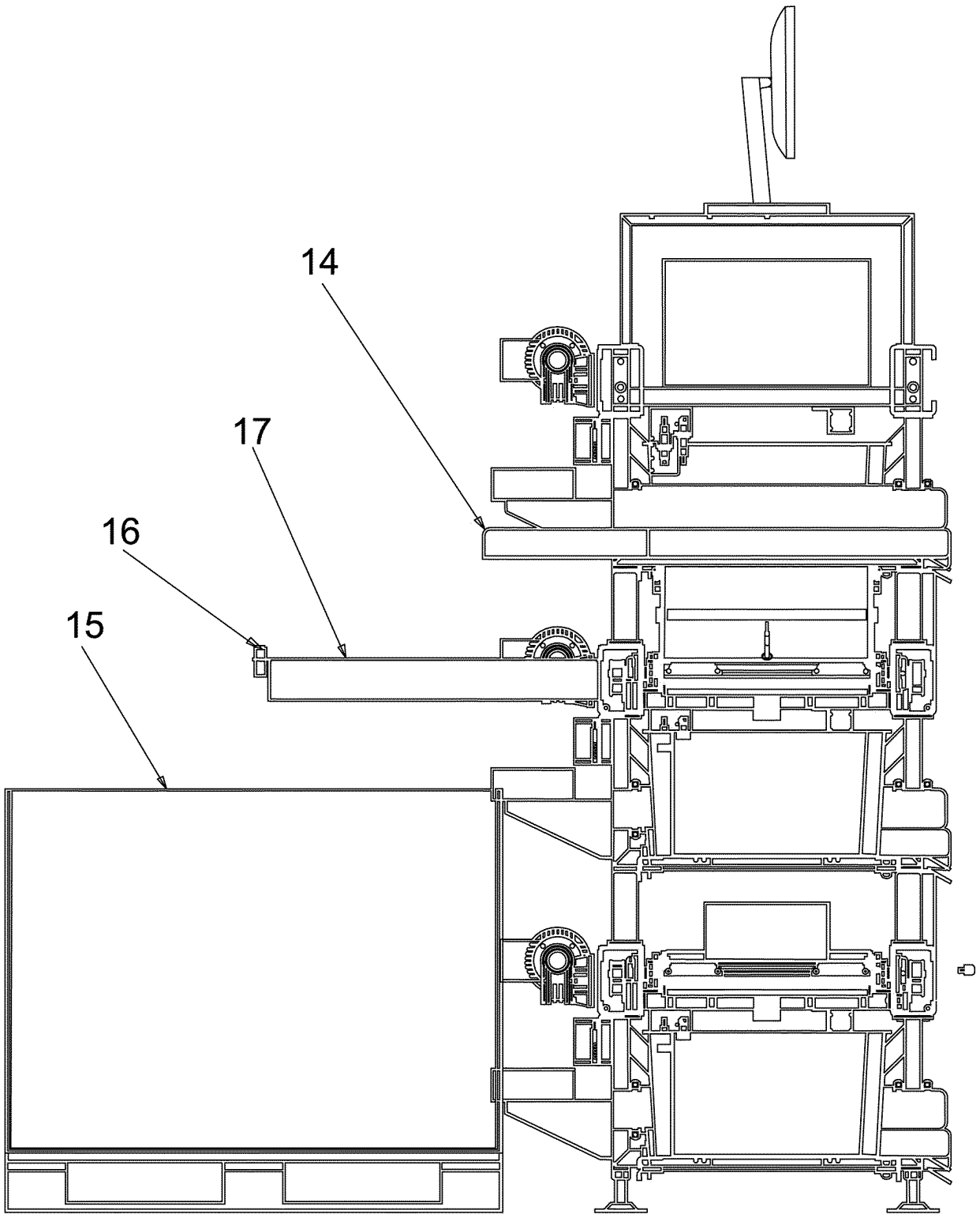
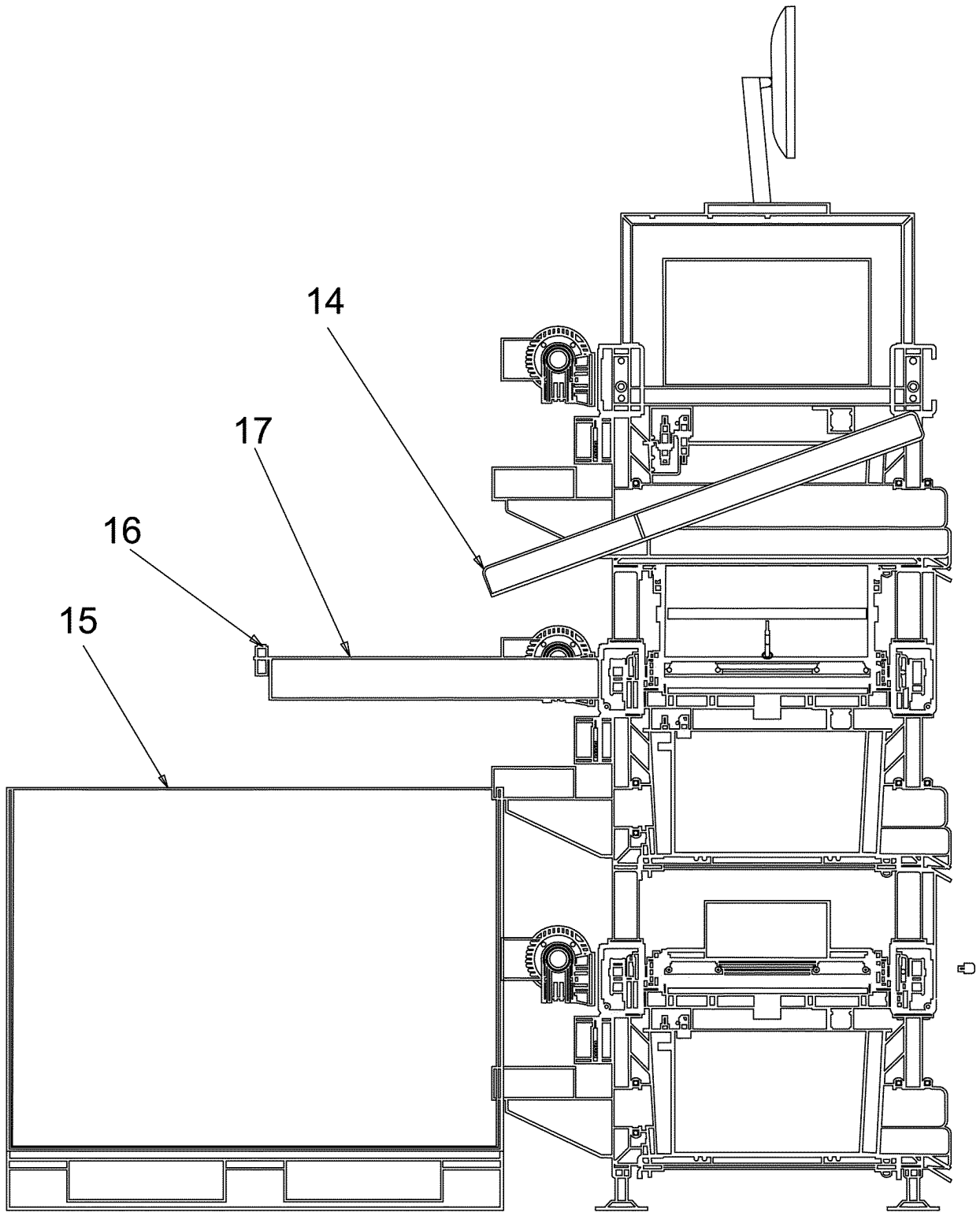


Fig. 6



REFERENCES CITED IN THE DESCRIPTION

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