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(54) Title: TRIPLE DRIVE SYSTEM INTEGRATED TO THE CUTTING MACHINES

(57) Abstract: The invention relates to a triple drive system (A) which is integrated on existing cutting machines used for cutting printed packaging papers.

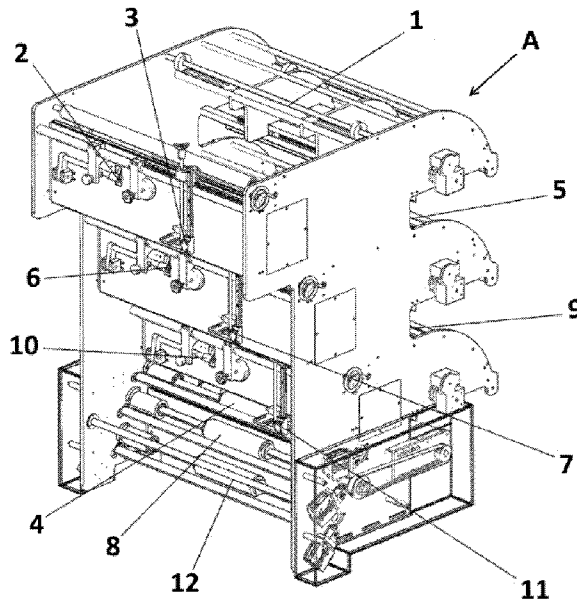


Figure 1

Published:

- *with international search report (Art. 21(3))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

TRIPLE DRIVE SYSTEM INTEGRATED TO THE CUTTING MACHINES

Technical Field

5 The present invention relates to a triple drive system which is integrated on existing cutting machines used for cutting printed packaging papers.

In particular, the invention relates to three times more product cutting in the same work time by assembling the triple drive system, instead of the single drive, to the product feed and cutting parts for the printed packaging papers.

Prior Art

10 In the prior art, different types of cutting machines are used for cutting the printed packaging papers. A single drive system is used for cutting in existing cutting machines. Printed packaging paper passes through a single cylinder of the drive system and proceeds towards the blades and the cutting is thereby performed. As a single drive system is used in existing cutting machines, cutting speed is reduced
15 and mass production capacity is reduced.

In the patent search, a system similar to the subject invention was not found. However, some patents made in the same field of art are described below.

European Patent No. EP2543504B1 relates to a device for processing packaging material for cigarette packets, which comprises a feed line for the packaging material,
20 the latter having a longitudinal edge which is substantially parallel with the feed line, and also comprises a first cutting device comprising at least one cutter profile extending along a main longitudinal line) which is substantially parallel with the feed line; at a first operating station and with the packaging material stationary, the first cutting device brings its cutting profile into contact with the edge of the packaging
25 material in a position such that the main longitudinal line of the selfsame profile lies, at the moment of cutting, in a plane which is substantially coplanar with the plane in which the packaging material lies so that the entire notch is made immediately and all at once.

Another document EP2537766B1 can be indicated as an example found in the literature search. The said invention relates to a completely cutting station and separating the packagings. It is related to completely cutting station to be separated cutting packages from a film composite by means of a movable, configured for severing the film composite completely cutting tool. The completely cutting station further comprises a transport system comprising a plurality of transport elements for transporting a respective one includes singulated package, wherein each transport member has a head portion for engaging the respective packing. The invention is characterized by the fact that the head portions of at least some transport elements are movable defined between a first position in which detected them packaging a through the film composite first distance from one another, and a second position, in of the packaging a second, smaller distance from one another or overlap at least in one direction in space at least partially.

Consequently, the existence of the above problems and the insufficiency of existing solutions necessitated an improvement in the relevant technical field.

Objects of the Invention

Based on the state of the art, the main object of the invention is to develop a triple drive system for printing printed wrapping paper, where disadvantages in the prior art are eliminated and thus the advantages are brought.

Another object of the invention is to provide three times more product cutting in the same work time by assembling the triple drive system instead of the single drive to the product feed and cutting parts for printed packaging papers.

Another object of the invention is to automatically control the entry of the packaging papers into the system, their movement within the system and all the parameters during their exiting from the system (desired distance, suitable cutting position, movement speed, etc.) according to the signals from the sensors and encoders via a control unit.

Short Description of the Drawings

Figure 1 is a general perspective view of the triple drive system according to the invention.

References

A Drive system

1. First edge control system
2. First encoder
- 5 3. First sensor
4. First drive cylinder
5. Second edge control system
6. Second encoder
7. Second sensor
- 10 8. Second drive cylinder
9. Third edge control system
10. Third encoder
11. Third sensor
12. Third drive cylinder

15 Detailed Description of the Invention

This invention relates to a triple drive system (A) which is integrated on the existing cutting machines used for cutting the printed packaging papers.

Figure 1 shows a general perspective view of the triple drive system (A) according to the invention.

- 20 The printed packaging paper moving on an existing machine enters a first edge control system (1). The first edge control system (1) ensures that the printed packaging paper enters the system properly and continues to be aligned in the system. The first edge control system (1) ensures that the product moves stably on the cylinders and enters the blades in the same position.

The printed packaging paper exits the first edge control system (1) and enters the first drive cylinder (4). During this transition, the product passes against a first encoder (2) and a first sensor (3). In this way, the position information of the product is obtained. The first drive cylinder (4) enables the product to be driven towards the blades in a distanced manner (the desired distance or the appropriate cutting position). The first drive cylinder (4), which performs the paper driving, manages the driving distance according to the information from the control unit. The control unit determines the current position of the paper according to the information from the first encoder (2) and the first sensor (3). The current position is interpreted in the PLC control unit and the driving distance is transferred to the motors each time in such a way that the printing on the product and the blades are aligned.

The motors rotate the first drive cylinder (4) at the same rate. The first drive cylinder (4) also feeds the product at the same rate in front of the blades. In this way, the stable cutting process is repeated continuously.

The printed packaging paper exits the second edge control system (5) and enters the second drive cylinder (8). The product passes through a second encoder (6) and a second sensor (7) during this transition. In this way, the position information of the product is obtained. The second drive cylinder (8) allows the product to be driven towards the blades in a distanced manner (the desired distance or the appropriate cutting position). The second drive cylinder (8), which performs the paper driving, manages the driving distance according to the information from the control unit.

Similarly, printed packaging paper exits the third edge control system (9) and enters the third drive cylinder (12). The product passes through a third encoder (10) and a third sensor (11) during this transition. In this way, the position information of the product is obtained. The third drive cylinder (12) allows the product to be driven towards the blades in a distanced manner (the desired distance or the appropriate cutting position). The third drive cylinder (12), which performs the paper driving, manages the driving distance according to the information from the control unit.

Also, the PLC control unit adjusts the positions of the products in the second drive cylinder (8) and the third drive cylinder (12) with respect to the position of the product in the first drive cylinder (4) and thereby align the products so that the printing

patterns overlap one another. Thus, three layers of product can be cut with one blade unit at the same time. After the blade cutting, the products were obtained as being cut and prepared for use.

In this way, three times more products are cut from the existing capacity in the same work period.

CLAIMS

1. A triple drive system which is integrated on the existing cutting machines used for cutting the printed packaging papers characterized in that it comprises
 - a first edge control system (1), a second edge control system (5), a third edge control system (9) which ensure that the printed packaging paper enters the system properly and continues to be aligned in the system,
 - a first drive cylinder (4) which the printed packaging paper enters after exiting the first edge control system (1)
 - a second drive cylinder (8) which the printed packaging paper enters after exiting the second edge control system (5),
 - a third drive cylinder (12) which the printed packaging paper enters after exiting the third edge control system (9).
2. The triple drive system (A) according to claim 1, characterized in that it comprises a first encoder (2) in front of which the printed packaging paper passes before entering the first drive cylinder (4).
3. The triple drive system (A) according to claim 1, characterized in that it comprises a first sensor (3) in front of which the printed packaging paper passes before entering the first drive cylinder (4).
4. The triple drive system (A) according to claim 1, characterized in that it comprises a second encoder (6) in front of which the printed packaging paper passes before entering the second drive cylinder (8).
5. The triple drive system (A) according to claim 1, characterized in that it comprises a second sensor (7) in front of which the printed packaging paper passes before entering the second drive cylinder (8).
6. The triple drive system (A) according to claim 1, characterized in that it comprises a third encoder (10) in front of which the printed packaging paper passes before entering the third drive cylinder (12).

7. The triple drive system (A) according to claim 1, characterized in that it comprises a third sensor (11) in front of which the printed packaging paper passes before entering the third drive cylinder (12).

5 8. A method which is performed by the triple drive system (A) integrated on the existing cutting machines used for cutting the printed packaging papers, characterized in that

- the printed packaging paper enters a first edge control system (1),
- the position information of the product is obtained by the way that the packaging paper passes in front of a first encoder (2) and a first sensor (3) after exiting a first edge control system (1) but before entering a first driver cylinder (4),

- the position information of the product is obtained by the way that the printed packaging paper passes in front of a second encoder (6) and a second sensor (7) after exiting a second edge control system (5) but before entering a second driver cylinder (8),

- the position information of the product is obtained by the way that the printed packaging paper passes in front of a third encoder (10) and a third sensor (11) after exiting a third edge control system (9) but before entering a third driver cylinder (12),

- the printing patterns of the products are aligned to overlap one another by adjusting the positions of the products in the second drive cylinder (8) and the third drive cylinder (12) with respect to the position of the product in the first drive cylinder (4) by a PLC control unit (4), and three layers of product can be thereby cut with one blade unit at the same time.

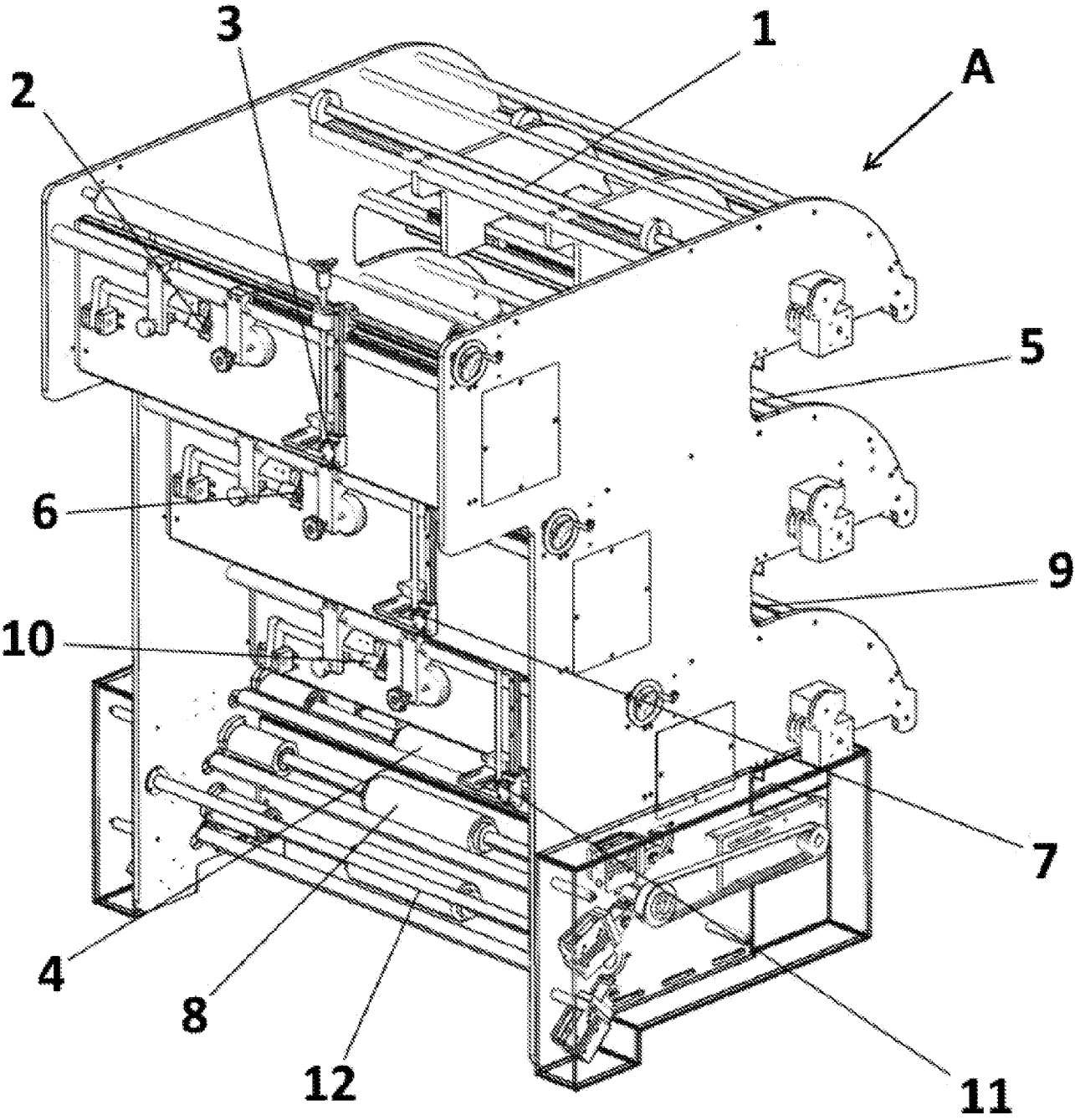


Figure 1

INTERNATIONAL SEARCH REPORT

International application No.

PCT/TR2018/050635

A. CLASSIFICATION OF SUBJECT MATTER

B65H 5/00 (2006.01)i; B65H 7/00 (2006.01)i

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)

B65H

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 practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	CN 2737755 Y (CHANGJIANG MECHANICAL EQUIPMEN [CN]) 02 November 2005 (2005-11-02) The whole document	1 2-8
Y	JP 2002346984 A (JAPAN MINISTRY OF FINANCE) 04 December 2002 (2002-12-04) The whole document	2-8
Y	CN 204487662 U (UNIV SHAANXI SCIENCE & TECH) 22 July 2015 (2015-07-22) The whole document	2-8



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

“E” earlier application or patent but published on or after the international filing date

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“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

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“&” document member of the same patent family

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Name and mailing address of the ISA/TR

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN	2737755	Y	02 November 2005	NONE	
JP	2002346984	A	04 December 2002	JP 4437188B B2	24 March 2010
CN	204487662	U	22 July 2015	NONE	