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(54) **TRIPLE DRIVE SYSTEM INTEGRATED TO THE CUTTING MACHINES**

IN SCHNEIDEMASCHINEN INTEGRIERTES DREIFACHANTRIEBSSYSTEM

SYSTÈME D'ENTRAÎNEMENT TRIPLE INTÉGRÉ AUX MACHINES DE COUPE

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- **No further relevant documents disclosed**

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Description

Technical Field

[0001] The present invention relates to a triple drive system which is integrated on existing cutting machines used for cutting printed packaging papers.

[0002] 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

[0003] 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 and mass production capacity is reduced.

[0004] 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.

[0005] European Patent No. EP2543504B1 relates to a device for processing packaging material for cigarette packets, which comprises a feed line for the packaging material, 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 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.

[0006] 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.

[0007] 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

[0008] 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.

[0009] 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.

[0010] 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

[0011] Figure 1 is a general perspective view of the triple drive system according to the invention.

References

[0012]

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

11. Third sensor

12. Third drive cylinder

Detailed Description of the Invention

[0013] This invention relates to a triple drive system (A) which is integrated on the existing cutting machines used for cutting the printed packaging papers.

[0014] Figure 1 shows a general perspective view of the triple drive system (A) according to the invention.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] 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.

[0019] 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.

[0020] 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.

[0021] 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 wherein 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 first encoder (2) in front of which the printed packaging paper passes before entering the first drive cylinder (4),
   - a first sensor (3) in front of which the printed packaging paper passes before entering the first drive cylinder (4).
   - a second drive cylinder (8) which the printed packaging paper enters after exiting the second edge control system (5),
   - a second encoder (6) in front of which the printed packaging paper passes before entering the second drive cylinder (8).
   - a second sensor (7) in front of which the printed packaging paper passes before entering the second drive cylinder (8).
   - a third drive cylinder (12) which the printed packaging paper enters after exiting the third edge control system (9).
   - a third encoder (10) in front of which the printed packaging paper passes before entering the third drive cylinder (12).
   - a third sensor (11) in front of which the printed packaging paper passes before entering the third drive cylinder ((12), wherein the control systems are configured such that 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, and three layers of product can be thereby cut with one blade unit at the same time.

2. A method which is performed by a triple drive system (A) integrated on an existing cutting machines used for cutting printed packaging papers, comprising

- 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, and three layers of product can be thereby cut with one blade unit at the same time.

Patentansprüche

1. Dreifachantriebssystem, das in bestehende Schneidemaschinen integriert ist, die zum Schneiden der bedruckten Verpackungspapiere verwendet werden, wobei es folgendes umfasst:

- ein erstes Randkontrollsystem (1), ein zweites Randkontrollsystem (5), ein drittes Randkontrollsystem (9), die sicherstellen, dass das bedruckte Verpackungspapier richtig in das System eintritt und in dem System ausgerichtet bleibt,
- einen ersten Antriebszylinder (4), in den das bedruckte Verpackungspapier eintritt, nachdem es aus dem ersten Randkontrollsystem (1) ausgetreten ist,
- einen ersten Kodierer (2), vor dem das bedruckte Verpackungspapier vorbeiläuft, bevor es in den ersten Antriebszylinder (4) eintritt,
- einen ersten Sensor (3), vor dem das bedruckte Verpackungspapier vorbeiläuft, bevor es in den ersten Antriebszylinder (4) eintritt,
- einen zweiten Antriebszylinder (8), in den das bedruckte Verpackungspapier eintritt, nachdem es aus dem zweiten Randkontrollsystem (5) ausgetreten ist,
- einen zweiten Kodierer (6), vor dem das bedruckte Verpackungspapier vorbeiläuft, bevor es in den zweiten Antriebszylinder (8) eintritt,
- einen zweiten Sensor (7), vor dem das bedruckte Verpackungspapier vorbeiläuft, bevor es in den zweiten Antriebszylinder (8) eintritt,
- einen dritten Antriebszylinder (12), in den das bedruckte Verpackungspapier eintritt, nachdem es aus dem dritten Randkontrollsystem (9) ausgetreten ist,
- einen dritten Kodierer (10), vor dem das bedruckte Verpackungspapier vorbeiläuft, bevor es in den dritten Antriebszylinder (12) eintritt,
- einen dritten Sensor (11), vor dem das bedruckte Verpackungspapier vorbeiläuft, bevor es in den dritten Antriebszylinder (12) eintritt,

wobei die Kontrollsysteme so eingerichtet sind, dass die Druckmuster der Produkte ausgerichtet werden, einander zu überlappen, indem die Positionen der Produkte in dem zweiten Antriebszylinder (8) und dem dritten Antriebszylinder (12) in Bezug auf die Position des Produkts in dem ersten Antriebszylinder (4) durch eine PLC-Steuereinheit eingestellt werden und drei Schichten Produkt somit gleichzeitig mit einer Klingeneinheit geschnitten werden können.

2. Verfahren, das von einem Dreifachantriebssystem (A) durchgeführt werden kann, das in bestehende Schneidemaschinen integriert ist, die zum Schneiden bedruckter Verpackungspapiere verwendet werden, wobei es folgendes umfasst:

- das bedruckte Verpackungspapier tritt in ein erstes Randkontrollsystem (1) ein,
- die Positionsinformationen des Produkts werden anhand der Art und Weise erhalten, wie das Verpackungspapier vor einem ersten Kodierer (2) und einem ersten Sensor (3) vorbeiläuft, nachdem es aus einem ersten Randkontrollsystem (1) ausgetreten ist, aber bevor es in einen ersten Antriebszylinder (4) eintritt,
- die Positionsinformationen des Produkts werden anhand der Art und Weise erhalten, wie das bedruckte Verpackungspapier vor einem zweiten Kodierer (6) und einem zweiten Sensor (7) vorbeiläuft, nachdem es aus einem zweiten Randkontrollsystem (5) ausgetreten ist, aber bevor es in einen zweiten Antriebszylinder (8) eintritt,
- die Positionsinformationen des Produkts wer-

den anhand der Art und Weise erhalten, wie das bedruckte Verpackungspapier vor einem dritten Kodierer (10) und einem dritten Sensor (11) vorbeiläuft, nachdem es aus einem dritten Randkontrollsystem (9) ausgetreten ist, aber bevor es in einen dritten Antriebszylinder (12) eintritt,
- die Druckmuster der Produkte werden ausgerichtet, einander zu überlappen, indem die Positionen der Produkte in dem zweiten Antriebszylinder (8) und dem dritten Antriebszylinder (12) in Bezug auf die Position des Produkts in dem ersten Antriebszylinder (4) durch eine PLC-Steuereinheit eingestellt werden und somit drei Schichten Produkt gleichzeitig mit einer Klingeneinheit geschnitten werden können.

Revendications

1. Système d'entraînement triple qui est intégré sur les machines de coupe existantes utilisées pour couper les papiers d'emballage imprimés, dans lequel il comprend

- un premier système de commande des bords (1), un deuxième système de commande des bords (5), un troisième système de commande des bords (9) qui assurent que le papier d'emballage imprimé pénètre correctement dans le système et continue d'être aligné dans le système,
- un premier cylindre d'entraînement (4) dans lequel le papier d'emballage imprimé pénètre après être sorti du premier système de commande des bords (1),
- un premier encodeur (2) devant lequel le papier d'emballage imprimé passe avant d'entrer dans le premier cylindre d'entraînement (4),
- un premier capteur (3) devant lequel le papier d'emballage imprimé passe avant d'entrer dans le premier cylindre d'entraînement (4),
- un deuxième cylindre d'entraînement (8) dans lequel le papier d'emballage imprimé pénètre après être sorti du deuxième système de commande des bords (5),
- un deuxième encodeur (6) devant lequel le papier d'emballage imprimé passe avant d'entrer dans le deuxième cylindre d'entraînement (8),
- un second capteur (7) devant lequel le papier d'emballage imprimé passe avant d'entrer dans le deuxième cylindre d'entraînement (8),
- un troisième cylindre d'entraînement (12) dans lequel le papier d'emballage imprimé pénètre après être sorti du troisième système de commande des bords (9),
- un troisième encodeur (10) devant lequel le papier d'emballage imprimé passe avant d'entrer dans le troisième cylindre d'entraînement (12),
- un troisième capteur (11) devant lequel le papier d'emballage imprimé passe avant d'entrer dans le troisième cylindre d'entraînement (12), dans lequel les systèmes de commande sont configurés de telle façon que les motifs d'impression des produits sont alignés pour se chevaucher l'un l'autre en ajustant les positions des produits dans le deuxième cylindre d'entraînement (8) et le troisième cylindre d'entraînement (12) par rapport à la position du produit dans le premier cylindre d'entraînement (4) par une unité de commande à automate programmable, et trois couches peuvent être ainsi coupées avec une unité de lame en même temps.

2. Procédé qui est exécuté par un système d'entraînement triple (A) intégré sur une machine de coupe existante utilisée pour couper les papiers d'emballage imprimés, comprenant ce qui suit :

- le papier d'emballage imprimé pénètre dans un premier système de commande des bords (1),
- les informations de position du produit sont obtenues par le fait que le papier d'emballage passe devant un premier encodeur (2) et un premier capteur (3) après être sorti d'un premier système de commande des bords (1) mais avant d'entrer dans un premier cylindre d'entraînement (4),
- les informations de position du produit sont obtenues par le fait que le papier d'emballage passe devant un deuxième encodeur (6) et un deuxième capteur (7) après être sorti d'un deuxième système de commande des bords (5) mais avant d'entrer dans un deuxième cylindre d'entraînement (8),
- les informations de position du produit sont obtenues par le fait que le papier d'emballage passe devant un troisième encodeur (10) et un troisième capteur (11) après être sorti d'un troisième système de commande des bords (9) mais avant d'entrer dans un troisième cylindre d'entraînement (12),
- les motifs imprimés des produits sont alignés pour se chevaucher l'un l'autre en ajustant les positions des produits dans le deuxième cylindre d'entraînement (8) et le troisième cylindre d'entraînement (12) par rapport à la position du produit dans le premier cylindre d'entraînement (4) par une unité de commande à automate programmable, et trois couches peuvent être ainsi coupées avec une unité de lame en même temps.

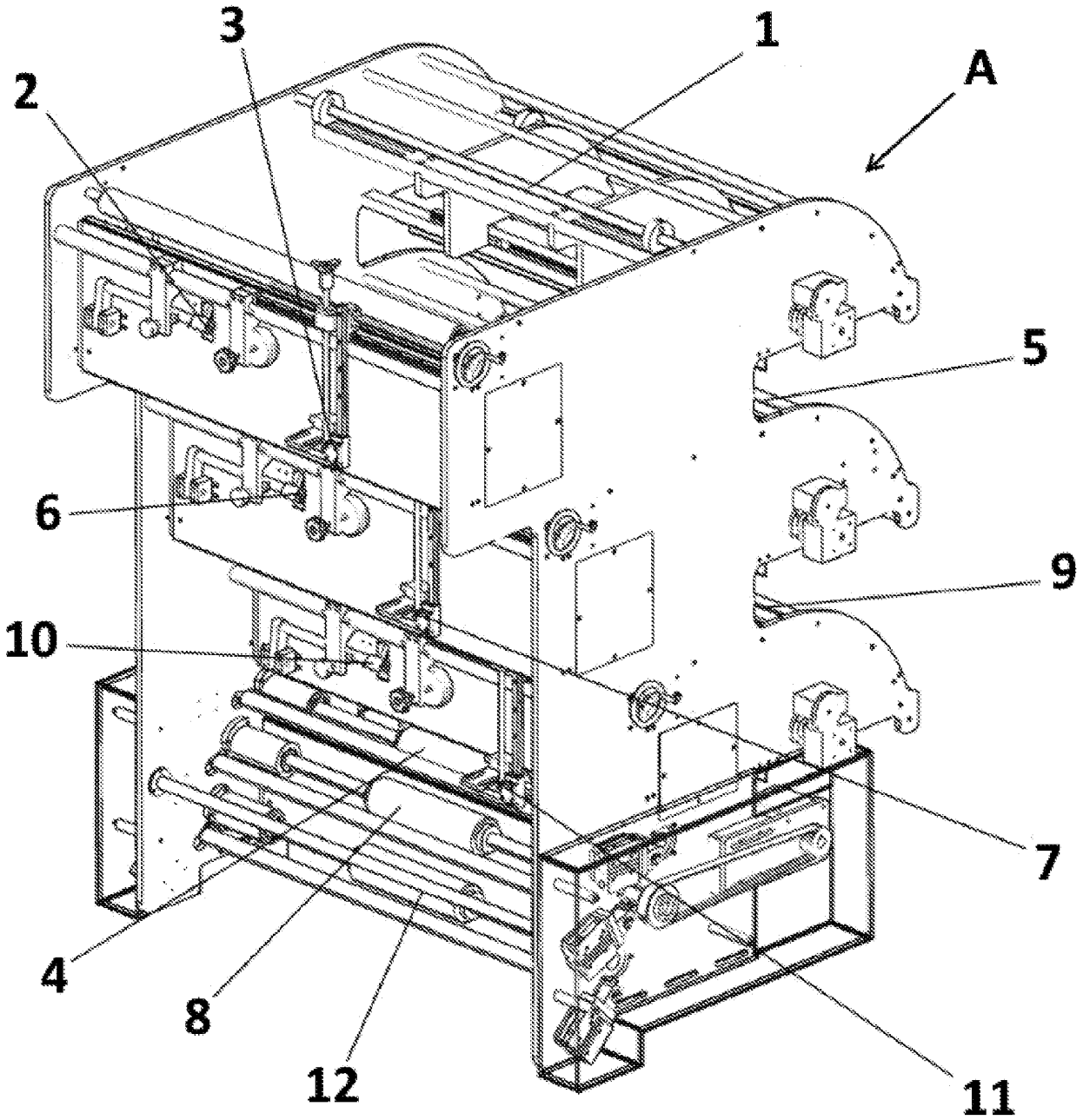


Figure 1

REFERENCES CITED IN THE DESCRIPTION

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- EP 2543504 B1 **[0005]**
- EP 2537766 B1 **[0006]**