(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 121 432**
B1

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **09.12.87**

(51) Int. Cl.⁴: **B 65 H 29/60**, B 65 H 29/24

(21) Application number: **84302223.7**

(22) Date of filing: **30.03.84**

(54) **Guide apparatus for a carton blank delivery system.**

(30) Priority: **31.03.83 GB 8309038**

(43) Date of publication of application:
10.10.84 Bulletin 84/41

(45) Publication of the grant of the patent:
09.12.87 Bulletin 87/50

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI NL SE

(56) References cited:
DE-A-2 426 217
FR-A-1 561 129
US-A-3 659 840

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Courier Press, Leamington Spa, England.

EP 0 121 432 B1

Description

This invention relates to guide apparatus for a carton blank delivery system, and to a carton blank delivery system incorporating such a guide apparatus. The invention is particularly concerned with apparatus for guiding some of the blanks of a plurality of rows of blanks in a first direction, and to guide the rest of said blanks in a second direction, thereby separating blanks into two streams.

Guide apparatus of this type is necessary in blank delivery systems when either the speed of the input stream of blanks is so high that interference occurs between successive blanks as they are ejected onto a shingling conveyor (that is to say the tail of one blank has insufficient time to fall clear of the leading edge of the following blank); or the blanks are nested, rotated or printed in such a manner that they must be collected separately.

Known guide apparatus of this type makes use of either mechanical blank deflectors, or an oscillating roller system which directs the blanks upwards and downwards alternately. Unfortunately, these known types of guide apparatus are not particularly reliable. Moreover, they are difficult to modify for use with different forms of blank.

U.S. Patent Specification No. 3 659 840 describes guide apparatus having two divergent conveyors, each of which is constituted by a pair of vacuum belts. Vacuum is applied alternatively to the belts of the two conveyors via a control valve, so that sheets of material fed to the apparatus can be alternately transported by the two conveyors. The apparatus has the disadvantage that separation of the sheets requires relatively complicated control means, including (apart from the control valve), control signals and means for generating control signals. Moreover, the apparatus cannot separate sheets whose length is substantially less than that of the conveyors.

The aim of the invention is to provide guide apparatus which can be used to separate blanks, and which is reliable in operation, and is easily modified to accommodate different sizes and shapes of blank.

The present invention provides apparatus for guiding and separating blanks, the apparatus comprising first and second conveyor means whose input ends are positioned on opposite sides of the feed path of a stream of a plurality of rows of blanks to the apparatus, each of the conveyor means being constituted by a plurality of laterally-spaced suction belt means, each suction belt means being aligned with the feed path of the respective row of blanks, each of the suction belt means being provided with a plurality of suction ports, wherein the suction belt means of the two sets of conveyor means are driven in synchronism by drive wheels positively engaging the suction belt means, the suction ports of the suction belt means of the two sets of conveyor means having a continuous vacuum force exerted therethrough, the suction ports of the suction belt means of the two sets of conveyor means being so positioned that some of the blanks of each row of blanks are picked up by the suction ports of the suction belt means of the first conveyor means and the rest of the blanks of each row of blanks are picked up by the suction ports of the suction belt means of the second conveyor means.

Preferably, the conveyor means are such that alternate blanks of each row are conveyed by the suction belt means of the first and second conveyor means.

In a preferred embodiment, the first and second conveyor means diverge away from the input ends thereof and in the direction of blank feed.

Advantageously, each of the suction belt means is constituted by a pair of suction belts which are laterally spaced with respect to the direction of blank feed. Preferably, each of the conveyor means is constituted by three pairs of laterally-spaced suction belts.

Where the apparatus is used to separate alternate blanks of each row, each suction belt may have an even number of sets of suction ports. Preferably, there are four sets of suction ports. Each set of suction ports may have at least one, and preferably two, suction ports.

Instead of positioning the suction ports in sets, they may be positioned in a continuous row round each of the suction belts. In this case, means may be provided for closing at least one suction port of at least one suction belt, and the suction ports of each suction belt are equispaced.

Preferably, a respective box-like chamber is associated with each of the suction belts, the portion of each chamber which faces the associated suction belt being closed off by a curved, longitudinally-slotted plate, and the chambers being connectible to a vacuum pump via an inlet manifold, the arrangement being such that each of the suction belts passes over the associated curved, longitudinally-slotted plate so that the suction ports of the belts can be subjected to a sub-atmospheric pressure.

The present invention also provides a system for delivery blanks, the system comprising feed means for receiving a stream of a plurality of rows of blanks from an upstream processing unit, guide apparatus positioned downstream of the feed means, and first and second pairs of shingling units positioned downstream of the guide apparatus, the guide apparatus being as defined above, wherein respective shingling units of the first pair of shingling units are positioned at the downstream ends of the first and second conveyor means, and respective shingling units of the second pair of shingling units are positioned at the downstream ends of the shingling units of the first pair.

A carton blank delivery system incorporating a guide apparatus constructed in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a side elevation of the delivery system;

Fig. 2 is a perspective view of the guide apparatus of the delivery system of Fig. 1;

Fig. 3 is an enlarged, longitudinal cross-section of part of one of the suction belts of the guide apparatus of Figs. 1 and 2; and

Fig. 4 is an enlarged, transverse cross-section of the suction belt shown in Fig. 3.

Referring to the drawings, Fig. 1 shows a delivery system which comprises feed means A, guide means B positioned downstream of the feed means, a first pair of shingling units C_1 and C_2 positioned downstream of the guide apparatus, and a second pair of shingling units D_1 and D_2 positioned downstream of the first pair of shingling units. The feed means A is arranged to deliver a continuous stream of carton blanks 1 to the guide apparatus, and is constituted by a plurality of pairs of rollers 2. The feed means A is positioned downstream of cutting and creasing units (not shown) which are effective to cut out and crease carton blanks from a continuous web of board.

As shown in Fig. 2, the pre-formed carton blanks 1 are fed to the guide apparatus in three rows. Moreover, alternate blanks of each row are "right-hand" blanks 1a and "left-hand" blanks 1b. The right-hand blanks 1a are identical with the left-hand blanks 1b, but are rotated through 180° with respect to the left-hand blanks. The blanks 1 are formed in this manner, with right-hand blanks 1a alternating with left-hand blanks 1b, as this results in a smaller amount of scrap material than would be the case if all the blanks were pre-formed as either right-hand blanks or left-hand blanks.

The guide apparatus B is constituted by an upper set of conveyors E, and a lower set of conveyors F (see Fig. 2). There are six conveyors in each of the sets E and F, and the guide apparatus is arranged so that two conveyors of each set are aligned with the lateral edge portions of the blanks 1 in each of the three rows of blanks. As shown best in Fig. 1, the two sets of conveyors E and F diverge in the direction of carton blank feed. Each conveyor E or D includes an endless, internally-toothed belt 3 (best seen in Fig. 3), which is driven by a pair of externally-toothed wheels 4 and 5. A respective box-like chamber 6 is associated with each of the belts 3. The inwardly-facing surfaces of the chambers 6 are closed off by curved, longitudinally-slotted plates (not shown). The conveyors E and F are so constructed that each of the belts 3 passes over the curved, slotted plate of the associated chamber 6. Each of the chambers 6 is connected to a vacuum pump (not shown) via an inlet manifold 7 and a pair of inlets 8. Each of the belts 3 is provided with four sets of suction ports 9. The sets of suction ports 9 are equispaced around the belts 3, and each of these sets has two suction ports. Each of the ports 9 is constituted by an aperture 9a in the associated belt 3, and by a washer-shaped head 9b fixed to the outer surface of the belt. Thus, as the belts 3 pass over the slotted plates of the chambers 6, the suction ports 9 are subjected to the partial vacuum within these chambers, so that any blank 1 in contact therewith will be held firmly against the associated belt. Each of the ports 9 can be sealed off from the partial vacuum inside the associated chamber 6 by means of a respective disc 9c which is a snap fit within the head of that port (see Figs. 3 and 4). Thus, the belts 3 can easily be adapted to vary the number of ports 9 in use. The belts 3 are driven in synchronism by a common drive means (not shown) via gear means (not shown). Moreover, the suction ports 9 are so positioned on their belts that, as the rows of blanks 1 are fed to the input end of the guide apparatus B, alternate blanks of each row are picked up by the belts 3 of the conveyors E, and alternate blanks are picked up by the belts 3 of the conveyors F. Thus, the right-hand blanks 1a can be picked up by the belts 3 of the upper conveyors E and the left-hand blanks 1b can be picked up by the belts 3 of the lower conveyors F. In this way, the right-hand blanks 1a are separated from the left-hand blanks 1b, so that there is no danger of interference between successive blanks as they are fed along the delivery system downstream of the guide apparatus B.

At the outlet ends of the conveyors E and F the blanks 1a and 1b are fed respectively to first shingling units C_1 and C_2. The shingling units C_1 and C_2 are standard conveyor-belt shingling units whose speed is slightly less than half that of the input speed of the carton blanks 1a and 1b. Thus, the shingling units C_1 and C_2 are effective to overlap the leading and trailing edges of the carton blanks 1a and 1b by a small amount. After leaving the shingling units C_1 and C_2, the carton blanks 1a and 1b pass respectively to second shingling units D_1 and D_2. The shingling units D_1 and D_2 are also standard conveyor-belt shingling units. The units D_1 and D_2 are slow-speed shingling units, and the carton blanks 1a and 1b are made to overlap by almost their full length in these units. The two sets of shingling units C and D are, therefore, effective to slow down the delivery speed of the carton blanks 1a and 1b, and to perform a preliminary stacking operation. As the blanks leave the downstream shingling units D_1 and D_2, they are, therefore, ready for immediate stacking by either manual or automatic means.

The guide apparatus described above has a number of advantages. In particular, this apparatus is particularly suitable for separating successive blanks which are nested, positioned or printed in such a manner that they must be collected separately. Another advantage of this guide apparatus is that the use of suction belts is effective to guide the blanks through the entire length of the guide apparatus, and this was not possible with the known types of apparatus using deflector plates or oscillating rollers. Consequently, this guide apparatus gives an improved guiding function. Moreover, the blanks are held in position by suction belts at their

opposite lateral edges as they pass through the apparatus, so that this guiding function is particularly positive and secure.

The guide apparatus described above could be modified in a number of ways. For example, each of the suction belts 3 could be provided with a different number of sets of suction ports 9. Typically, each suction belt 3 could have any number of sets of suction ports 9, but two, four, six or any other even number of sets of suction ports is preferred. Moreover, each set of suction ports 9 could comprise one or more suction ports. It would also be possible for each suction belt 3 to be provided with a continuous row of equispaced suction ports 9. In use, and depending upon the particular configuration of the blanks to be guided, most of the suction ports 9 would be blocked off by discs 9c, so that only the suction ports positioned at predetermined spacings along the suction belts 3 would be used to convey the blanks. Obviously, this particular arrangement is very versatile, as it enables the same suction belts 3 to be used for conveying many different types of blank, it being necessary only to block off different suction ports 9 for each type of blank.

Where the apparatus is used to guide blanks of relatively large width, it would also be possible to provide three or more suction belts 3 for each row of blanks fed to the apparatus. Similarly, if the blanks to be guided are very narrow, only one suction belt 3 would be required for each row of blanks.

The guide apparatus described above could also be used to separate some blanks of a continuous stream of a plurality of rows of blanks from the rest thereof. Thus, for example, where the guide apparatus is used downstream of a printing and processing unit which utilises a printing roller which has three circumferentially-spaced dies in each row of several transversely-spaced rows, one die of each row may be arranged to print a different blank from the other two dies of that row. In this case, the suction belts 3 of the conveyors of one of the sets E or F will be arranged to convey every third blank, and the suction belts 3 of the conveyors of the other set will be arranged to guide the rest of the blanks. In this way, different blanks can be separated from the continuous stream containing both types of blank in a reliable manner.

The apparatus described above could also be used to separate all the blanks in a given row from all the blanks in an adjacent row. In other words, the blanks of a plurality of rows of blanks can be separated transversely as well as longitudinally. This is particularly useful for blanks which are excessively interleafed edge-to-edge.

It would also be possible to use the guide apparatus described above to separate the blanks of a plurality of rows of blanks transversely with respect to the direction of feed. In this case, the suction belt means (usually a plurality of pairs of suction belts) of each conveyor will diverge transversely (as well as vertically) with respect to the direction of feed.

Although the guide apparatus described above has been referred to exclusively for use in guiding and separating blanks such as carton blanks, it will be appreciated that the apparatus could also be used for guiding and separating other flat articles such as printed labels, and the following claims should be construed in this light.

Claims

1. Apparatus for guiding and separating blanks (1), the apparatus comprising first and second conveyor means (E, F) whose input ends are positioned on opposite sides of the feed path of a stream of a plurality of rows of blanks (1a, 1b) to the apparatus, each of the conveyor means (E, F) being constituted by a plurality of laterally-spaced suction belt means (3), each suction belt means (3) being aligned with the feed path of a respective row of blanks, each of the suction belt means (3) being provided with a plurality of suction ports (9), wherein the suction belt means (3) of the two sets of conveyor means (E, F) are driven in synchronism by drive wheels (4, 5) positively engaging the suction belt means (3), the suction ports (9) of the suction belt means (3) of the two sets of conveyor means (E, F) having a continuous vacuum force exerted therethrough, the suction ports (9) of the suction belt means (3) of the two sets of conveyor means (E, F) being so positioned that some of the blanks (1a) of each row of blanks are picked up by the suction ports (9) of the suction belt means (3) of the first conveyor means (E) and the rest of the blanks (1b) of each row of blanks are picked up by the suction ports (9) of the suction belt means (3) of the second conveyor means (F).

2. Apparatus as claimed in claim 1, wherein the conveyor means (E, F) are such that alternate blanks (1a, 1b) of each row are conveyed by the suction belt means (3) of the first and second conveyor means (E, F).

3. Guide apparatus as claimed in claim 1 or claim 2, wherein the first and second conveyor means (E, F) diverge away from the input ends thereof and in the direction of blank feed.

4. Guide apparatus as claimed in any one of claims 1 to 3, wherein each of the suction belt means is constituted by a pair of suction belts (3) which are laterally spaced with respect to the direction of blank feed.

5. Guide apparatus as claimed in claim 4, wherein each of the conveyor means (E, F) is constituted by three pairs of laterally-spaced suction belts (3).

6. Guide apparatus as claimed in claim 4 or claim 5, wherein means (9c) are provided for closing at least one suction port (9) of at least one suction belt (3).

7. Guide apparatus as claimed in any one of claims 4 to 6, wherein a respective box-like chamber (6) is associated with each of the suction belts (3), the portion of each chamber (6) which faces the associated suction belt (3) being closed off by a curved, longitudinally-slotted plate, and

the chambers being connected to a vacuum pump via an inlet manifold (7), the arrangement being such that each of the suction belts (3) passes over the associated curved, longitudinally-slotted plate so that the suction ports (9) of the belts (3) can be subjected to a continuous sub-atmospheric pressure.

8. Guide apparatus as claimed in any one of claims 4 to 7, wherein each suction belt (3) has an even number of sets of suction ports (9).

9. Guide apparatus as claimed in claim 8, wherein there are four sets of suction ports (9).

10. Guide apparatus as claimed in claim 8 or claim 9, wherein each set of suction ports (9) has at least one suction port.

11. Guide apparatus as claimed in claim 10, wherein each set of suction ports (9) has two suction ports.

12. Guide apparatus as claimed in any one of claims 4 to 11, wherein the sets of suction ports (9) of each suction belt (3) are equispaced.

13. A system for delivery of blanks, the system comprising feed means (A) for receiving a stream of a plurality of rows of blanks (1) from an upstream processing unit, guide apparatus (B) positioned downstream of the feed means, and first and second pairs of shingling units (C_1, C_2, D_1, D_2) positioned downstream of the guide apparatus, the guide apparatus (B) being as claimed in any one of claims 1 to 12, wherein respective shingling units of the first pair of shingling units (C_1, C_2) are positioned at the downstream ends of the first and second conveyor means (E, F), and respective shingling units of the second pair of shingling units (D_1, D_2) are positioned at the downstream ends of the shingling units of the first pair (C_1, C_2).

Patentansprüche

1. Vorrichtung zum Führen und Vereinzeln von Bögen (1), welche erste und zweite Fördereinrichtungen (E, F) aufweist, deren Eingangsenden auf gegenüberliegenden Seiten der Förderbahn einer Folge einer Mehrzahl von Reihen der Bögen (1a, 1b) zur Vorrichtung angeordnet sind, wobei jede Fördereinrichtung (E, F) von einer Mehrzahl von in Querrichtung im Abstand angeordneten Saugbandeinrichtungen (3) gebildet wird, wobei jede Saugbandeinrichtung (3) zur Förderbahn einer zugeordneten Reihe von Bögen ausgerichtet ist, und wobei jede Saugbandeinrichtung (3) mit einer Mehrzahl von Saugöffnungen (9) versehen ist, bei welcher die Saugbandeinrichtung (3) der beiden Sätze von Fördereinrichtungen (E, F) synchron mittels Antriebsrädern (4, 5) angetrieben sind, die zwangsläufig in Eingriff mit den Saugbandeinrichtungen (3) sind, die Saugöffnungen (9) der Saugbandeinrichtungen (3) der beiden Sätze von Fördereinrichtungen (E, F) ununterbrochen eine Saugkraft hierdurch ausüben, die Saugöffnungen (9) der Saugbandeinrichtungen (3) der beiden Sätze von Fördereinrichtungen (E, F) derart angeordnet sind, daß einige der Bögen (1a) jeder Reihe von Bögen durch die Saugöffnungen (9) der Saugbandeinrichtungen (3) der ersten Fördereinrichtung (E) aufgenommen werden und der Rest der Bögen (1b) jeder Reihe von Bögen durch die Saugöffnungen (9) der Saugbandeinrichtung (3) der zweiten Fördereinrichtung (F) aufgenommen werden.

2. Vorrichtung nach Anspruch 1, bei der die Fördereinrichtungen (E, F) derart sind, daß abwechselnd Bögen (1a, 1b) jeder Reihe durch die Saugbandeinrichtungen (3) der ersten und zweiten Fördereinrichtungen (E, F) transportiert werden.

3. Führungsvorrichtung nach Anspruch 1 oder 2, bei der die erste und die zweite Fördereinrichtung (E, F) von den Eingangsenden weg und in Förderrichtung der Bögen divergierend verlaufen.

4. Führungsvorrichtung nach einem der Ansprüche 1 bis 3, bei der jede Saugbandeinrichtung von einem Paar von Saugbändern (3) gebildet wird, die in Querrichtung im Abstand bezüglich der Förderrichtung der Bögen angeordnet sind.

5. Führungsvorrichtung nach Anspruch 4, bei der jede Fördereinrichtung (E, F) von drei paarweise in Querrichtung im Abstand angeordneten Saugbändern (3) gebildet wird.

6. Führungsvorrichtung nach Anspruch 4 oder 5, bei der eine Einrichtung (9c) vorgesehen ist, die wenigstens eine Saugöffnung (9) wenigstens eines Saugbandes (3) verschließt.

7. Führungsvorrichtung nach einem der Ansprüche 4 bis 6, bei der eine entsprechende kastenartige Kammer (6) jedem der Saugbänder (3) zugeordnet ist, der Teil jeder Kammer (6), der dem zugeordneten Saugband (3) zugewandt ist, durch eine gekrümmte, in Längsrichtung geschlitzte Platte abgesperrt ist und bei der die Kammern mit einer Vakuumpumpe über eine Einlaßhauptleitung (7) verbunden sind, wobei die Auslegung derart getroffen ist, daß jedes Saugband (3) über die zugeordnete, gekrümmte und in Längsrichtung geschlitzte Platte geht, so daß die Saugöffnungen (9) der Bänder (3) ständig einem Unterdruck ausgesetzt werden können.

8. Führungsvorrichtung nach einem der Ansprüche 4 bis 7, bei der jedes Saugband (3) eine gerade Anzahl von Sätzen von Saugöffnungen (9) hat.

9. Führungsvorrichtung nach Anspruch 8, bei der vier Sätze von Saugöffnungen (9) vorgesehen sind.

10. Führungsvorrichtung nach Anspruch 8 oder 9, bei der jeder Satz von Saugöffnungen (9) wenigstens eine Saugöffnung hat.

11. Führungsvorrichtung nach Anspruch 10, bei der jeder Satz von Saugöffnungen (9) zwei Saugöffnungen hat.

12. Führungsvorrichtung nach einem der Ansprüche 4 bis 11, bei der die Sätze von Saugöffnungen (9) jedes Saugbandes (3) in gleichen Abständen angeordnet sind.

13. Anlage zur Abgabe von Bögen, die eine Fördereinrichtung (A) zur Aufnahme einer Folge einer Mehrzahl von Reihen von Bögen (1) von einer stromaufwärtigen Verarbeitungseinheit,

eine Führungsvorrichtung (B), die stromab der Fördereinrichtung angeordnet ist, und erste und zweite Paare von Zängeeinheiten (C_1, C_2; D_1, D_2) aufweist, die stromab der Führungsvorrichtung angeordnet sind, bei der die Führungsvorrichtung (B) wie in einem der Ansprüche 1 bis 12 angegeben ausgelegt ist, bei der die zugeordneten Zängeeinheiten des ersten Paares von Zängeeinheiten (C_1, C_2) an den stromabwärtigen Enden der ersten und zweiten Fördereinrichtung (E, F) angeordnet sind und bei der die zugeordneten Zängeeinheiten des zweiten Paares von Zängeeinheiten (D_1, D_2) an den stromabwärtigen Enden der Zängeeinheiten des ersten Paares (C_1, C_2) angeordnet sind.

Revendications

1. Appareil pour guider et séparer des feuilles de carton (1), cet appareil comprenant des premiers et des seconds convoyeurs (E, F) dont les extrémités d'entrée sont placées sur les côtés opposés du trajet d'alimentation d'un courant comprenant plusieurs rangées de feuilles (1a, 1b) allant vers l'appareil, chacun des convoyeurs (E, F) étant constitué de plusieurs bandes aspirantes (3) écartées latéralement, chaque bande aspirante (3) étant alignée sur le trajet d'alimentation d'une rangée respective de feuilles de carton et présentant plusieurs orifices d'aspiration (9), appareil dans lequel les bandes aspirantes (3) des deux de convoyeurs (E, F) sont entraînées en synchronisme par des roues d'entraînement (4, 5) qui engagent positivement les bandes aspirantes (3), les orifices d'aspiration (9) des bandes aspirantes (3) des deux jeux de convoyeurs (E, F) étant traversés par une force d'aspiration continue, les orifices d'aspiration (9) des bandes aspirantes (3) des deux jeux de convoyeurs (E, F) étant disposés de telle sorte que certaines (1a) des feuilles de carton de chaque rangée de feuilles sont captées par les orifices d'aspiration (9) des bandes aspirantes (3) des premiers convoyeurs (E), et le reste (1b) des feuilles de carton de chaque rangée de feuilles est capté par les orifices d'aspiration (9) des bandes aspirantes (3) des seconds convoyeurs (F).

2. Appareil selon la revendication 1, dans lequel les convoyeurs (E, F) sont tels que les feuilles de carton (1a, 1b) de chaque rangée sont alternativement entraînées par les bandes aspirantes (3) des premiers et des seconds convoyeurs (E, F).

3. Appareil selon la revendication 1 ou 2, dans lequel les premiers et seconds convoyeurs (E, F) divergent depuis leurs extrémités d'entrée dans la direction de l'alimentation en feuilles de carton.

4. Appareil selon l'une des revendications 1 à 3, dans lequel chaque bande aspirante est constituée de deux bandes à aspiration (3) écartées latéralement par rapport à la direction de l'alimentation en feuilles de carton.

5. Appareil selon la revendication 4, dans lequel chaque convoyeur (E, F) est constitué de trois paires de bandes à aspiration écartées latéralement.

6. Appareil selon l'une des revendications 4 ou 5, dans lequel des moyens (9c) sont prévus pour fermer au moins un orifice d'aspiration (9) d'au moins une bande à aspiration (3).

7. Appareil selon l'une des revendications 4 à 6, dans lequel une chambre en forme de boîte (6) est associée à chacune des bandes à aspiration (3), la partie de chaque chambre (6) qui fait face à la bande à aspiration associée (3) étant fermée par une plaque incurvée présentant des fentes longitudinales, et la chambre est reliée à une pompe à vide par un collecteur d'entrée (7), la disposition étant telle que chaque bande à aspiration (3) passe sur la plaque incurvée à fentes longitudinales associée de telle façon que les orifices d'aspiration (9) des bandes (3) peuvent être soumis a une pression continue inférieure à la pression atmosphérique.

8. Appareil selon l'une des revendications 4 à 7, dans lequel chaque bande à aspiration (3) a un nombre pair de jeux d'orifices d'aspiration (9).

9. Appareil selon la revendication 8, comportant quatre jeux d'orifices d'aspiration (9).

10. Appareil selon l'une des revendications 8 ou 9, dans lequel chaque jeu d'orifices d'aspiration (9) comporte au moins un orifice d'aspiration.

11. Appareil selon la revendication 10, dans lequel chaque jeu d'orifices d'aspiration (9) comporte deux orifices d'aspiration.

12. Appareil selon l'une des revendications 4 à 11, dans lequel les jeux d'orifices d'aspiration (9) de chaque bande aspirante (3) sont équidistants.

13. Système pour fournir des feuilles de carton, comprenant des moyens d'alimentation (A) pour recevoir un courant de plusieurs rangées de feuilles de carton (1) provenant d'une unité de traitement située en amont, un appareil de guidage (B) placé en aval des moyens d'alimentation et des premières et secondes paires d'unités (C_1, C_2, D_1, D_2) pour disposer les feuilles avec recouvrement partiel, l'appareil de guidage étant conforme à l'une des revendications 1 à 12, dans lequel les unités de disposition de feuilles de la première paire (C_1, C_2) sont placées respectivement aux extrémités aval des premiers et seconds convoyeurs (E, F) et les unités de disposition de la seconde paire (D_1, D_2) sont placées respectivement à l'extrémité aval des unités de disposition de la première paire (C_1, C_2).

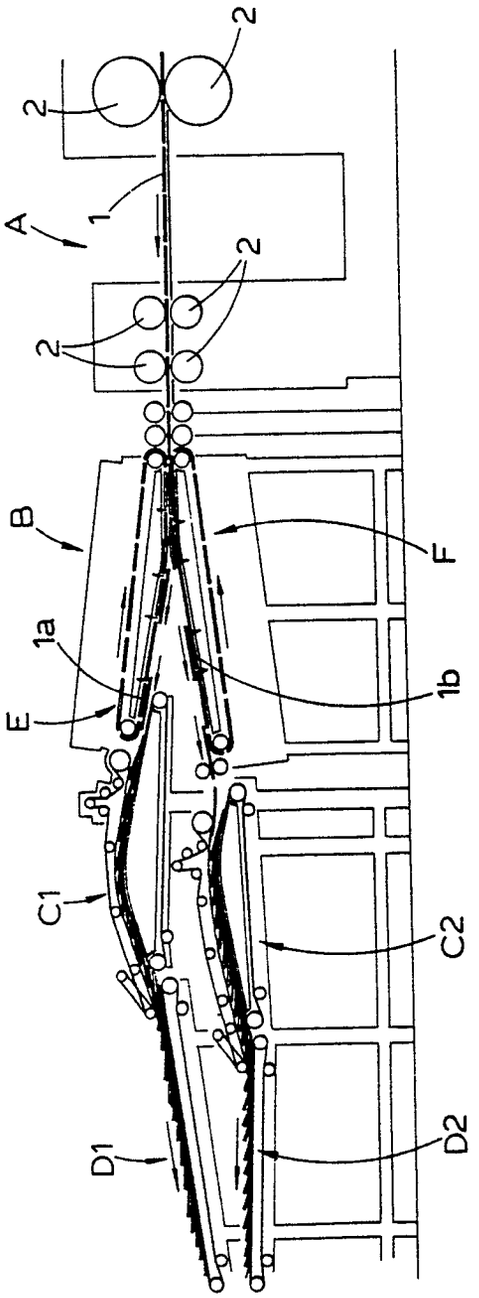

Fig.1

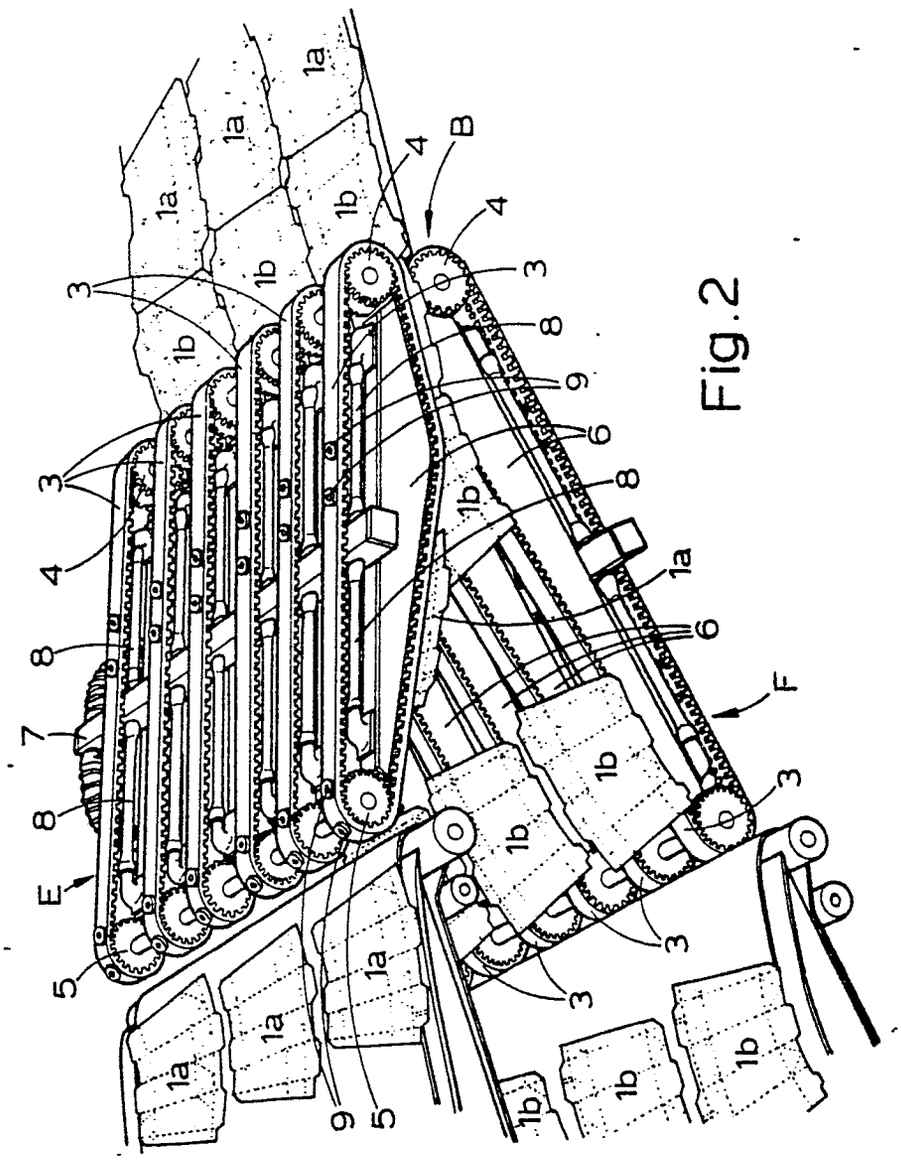

Fig.2

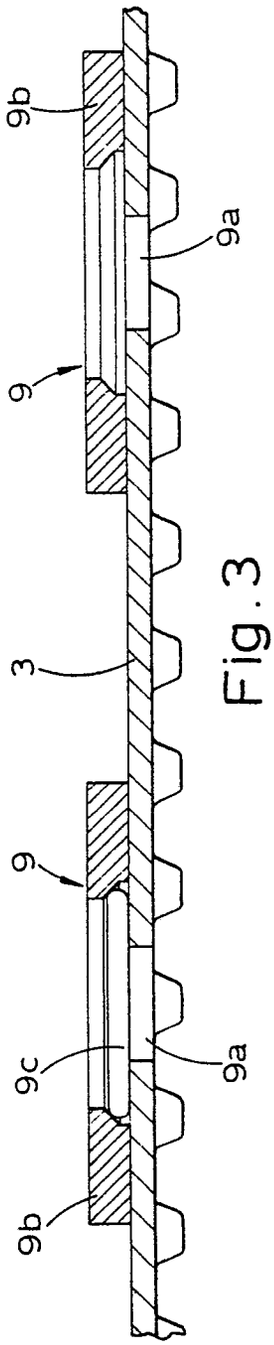

Fig.3

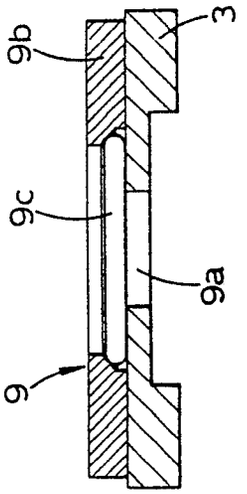

Fig.4