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(54) METHOD AND PLANT FOR FEEDING PRODUCTS, IN PARTICULAR CONFECTIONERY PRODUCTS, TO A PACKAGING MACHINE

VERFAHREN UND ANLAGE ZUM ZUFÜHREN VON PRODUKTEN, INSBESONDERE VON SÜSSWAREN, ZU EINER VERPACKUNGSMASCHINE

PROCÉDÉ ET INSTALLATION PERMETTANT D'INTRODUIRE DES PRODUITS, EN PARTICULIER DES PRODUITS DE CONFISERIE, DANS UNE MACHINE D'EMBALLAGE

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Description

[0001] The present invention relates to a method and to a plant for feeding products to a packaging machine.

[0002] In particular, the present invention relates to a method and to a plant for feeding confectionery products to a wrapping machine, to which the following disclosure specifically refers but without any loss of generality.

[0003] In the field of product supply in general, the use of a main or feeding conveyor is known, in which a feeding line receives the products to be conveyed in a loading station, passes through a transfer station in which the loaded products are transferred and enters a retrieval station in which the products that were not transferred in the transfer station are retrieved. In the transfer station there are several pick-up and transfer robots, which are arranged side by side and pick up the products in sequence from the feeding line and transfer them in ordered manner onto another feeding line, of an output conveyor which conveys them to the packaging machine.

[0004] Depending on the solution that is used, the feeding lines convey respective flows of the products in a same direction, i.e. in a co-flow, or in opposite directions, i.e. in a counter-flow.

[0005] Any products that are not transferred by the robots and are placed in the retrieval station are picked up manually or by means of dedicated robots in said retrieval station and placed in specific containers or left loose, and subsequently taken back to the loading station.

[0006] Alternatively, the products to be retrieved are placed, again either manually or by means of dedicated robots, on a section of the feeding conveyor arranged between the loading station and the transfer station so as to become part of the flow of products entering said transfer station.

[0007] Although plants of the type described above, known in the prior art, are used, they fall short of being satisfactory, especially as regards the retrieval of products not transferred in the transfer station.

[0008] In any case, the use of robots in the retrieval station to pick up the products to be retrieved makes the plant complex and increases production and operating costs.

[0009] All of the plants known in the prior art are bulky.

[0010] When the products are conveyed in co-flow, it is often difficult to form an orderly and continuous sequence of products on the output conveyor, i.e. without leaving any gaps where one or more products are missing. This inevitably causes further problems when the products are sent to a packaging or wrapping machine, as in the case of confectionery products.

[0011] In all cases, retrieving products that have not been transferred in the transfer station is a complicated and expensive process and the retrieval of all the products that are sent to the retrieval station is not always guaranteed, resulting in an inevitable and far from insignificant loss of production.

[0012] A plant for feeding product is disclosed in US 2009/129910 A1.

[0013] The purpose of the present invention is to provide a product feeding plant which overcomes the problems described above in a simple and cost-effective manner and, in particular, is efficient, reliable and easy and economical to implement and has limited overall dimensions.

[0014] According to the present invention there is provided a plant for feeding products, in particular confectionery products, as claimed in claim 1.

[0015] The present invention also relates to a method for feeding products, in particular confectionery products, to a packaging machine.

[0016] According to the present invention there is provided a method for feeding products, in particular confectionery products, as claimed in claim 9.

[0017] The present invention will now be described with reference to the accompanying drawings, illustrating a non-limiting embodiment thereof, in which:

figure 1 is a plan and substantially block diagram view of a first preferred embodiment of a plant for feeding products to a packaging machine, produced according to the teachings of the present invention;

figure 2 is similar to figure 1 and illustrates a second preferred embodiment of the plant for feeding products to a packaging machine according to the present invention; and

figure 3 is similar to figure 2 and illustrates an alternative embodiment of a detail in figure 2.

[0018] In figure 1, denoted as a whole by reference numeral 1 is a plant for feeding products 2 in general, and confectionery products in particular, to a operating machine, in the specific case a packaging machine 3 of a type known in the prior art and not described in detail.

[0019] The plant 1 comprises, upstream of the packaging machine 3 along a rectilinear product feeding direction indicated by reference numeral 4, an input or product loading station 5, a product transfer station 6 and a station 7 for retrieving products not transferred in the station 6.

[0020] Again with reference to figure 1, between the loading station 5 and the retrieval station 7, the plant 1 comprises a motor-powered conveyor 10 for conveying the products 2 loaded in the station 5. The conveyor 10 comprises a transport section 11, suitable to convey a plurality of products 2 in orderly ranks or loose in the direction 4 towards the station 7. The section 11 comprises, in turn, an input section 12 communicating with the station 5, an intermediate horizontal transport section 13 passing through the station 6 and an evacuation section 14 leading into the station 7.

[0021] Again with reference to figure 1, between the station 6 and the machine 3, the plant 1 comprises a motor-powered output conveyor 15, suitable, in use, to convey the products towards the machine 3 in a direction parallel to the direction 4 and in the same feeding direc-

tion of the products 2 conveyed by the conveyor 10. In the particular example described herein, the output conveyor 15 comprises a delivery section 16, in turn comprising a horizontal transport section 18 extending inside the station 6 at the side of the section 13 and a transfer section 19 communicating with an inlet of the machine 3.

[0022] The section 18 is coplanar with the section 13 and transversely spaced from said section 13. In the station 6, in a position that is preferably, but not necessarily, raised with respect to the sections 13 and 18, the plant 1 comprises a group 20 of robots 21 of the type known in the prior art for picking up and transferring the products 2, distributed along the direction 4.

[0023] Lastly, again with reference to figure 1, the plant comprises a assembly 23 for retrieving the products entering the station 7. The assembly 23, in turn, comprises a motor-powered retrieval conveyor 24, which extends from the station 7 and passes through the station 6 and is operated to return products arriving in said station 7 to the station 6.

[0024] In the particular example described herein, the conveyor 24 comprises a delivery line 25 movable in the opposite direction to the feeding directions of the delivery sections 11 and 16 and, in turn, comprising an input section 26 communicating with the retrieval station 7 and a horizontal transport section 27 parallel to the direction 4. Conveniently, the section 27 extends between the sections 13 and 18 in a position coplanar with said sections 13 and 18. Furthermore, conveniently, the sections 13, 18 and 27 are arranged alongside one another so that the pick-up and transfer strokes of the robots 21 are reduced to a minimum.

[0025] The assembly 23 further comprises a deflector 29, which in turn comprises a horizontal support table 30 and a fixed or adjustable tilt partition 31, which extends upwards from the table 30 to divert the products 2 towards the input section 26 of the retrieval conveyor 24.

[0026] Upstream of the station 6, the assembly 23 comprises a product extraction device 33, of a type known in the prior art, into which the conveyor 24 leads after passing through the station 6.

[0027] Again with reference to figure 1, the conveyors 10, 15 and 24 and the robots 21 are controlled by a plant control unit, denoted by reference numeral 34. The unit 34 may be an independent unit or configured to communicate with the packaging machine 3 to synchronise the feeding of the products.

[0028] In use, the conveyor 10 conveys a flow A of products 2 in orderly ranks, as in the example described here, or loose, through the station 6. In the station 6, the products 2 are picked up in sequence and transferred by the robots 21 onto the section 16 of the conveyor 15 to create a discontinuous flow B of transferred products, indicated by reference numeral 2A (figure 1). Said section 16 conveys the flow B in sequence towards the inlet of the machine 3.

[0029] The products 2 not picked up by the robots 21 stay on the section 11 and are first conveyed into the station 7 above the table 30 and then diverted by the partition 31 onto the line 25 of the conveyor 24 to form a discontinuous flow C of retrieved products, indicated by reference numeral 2B, on said line 25. The line 25 carries the products 2B into the station 6 between the flows A and B and in the opposite direction to the feeding direction of said flows A and B. In the station 6, the robots 21 pick up the retrieved products 2B and deposit them on the section 16 of the conveyor 15, incorporating them in the discontinuous flow B so as to form and transfer an orderly and continuous sequence B1 of products 2A towards the machine 3. In order to retrieve all of the products 2B entering the station 6, the robots 21 are controlled by the unit 34, to give priority to picking up the retrieved products 2B from the section 27 of the retrieval conveyor 24.

[0030] Any retrieved products 2B that are not picked up by the robots 21 in the station 6 are carried back, again by the line 25 of the conveyor 24, to the removal station 33 where they are placed in containers and removed.

[0031] The embodiment illustrated in figure 2 relates to a plant 35, which differs from the plant 1 for certain construction details and the components of which are denoted using the same reference numerals used to denote the corresponding parts of the plant 1.

[0032] The plant 35 comprises two output conveyors 15 arranged on opposite sides of the conveyor 10 to convey respective ordered sequences B1 of products 2A towards respective machines 3, and a retrieval assembly 36, which differs from the assembly 23 in that it comprises two retrieval conveyors 24 with respective transport sections 27 extending into the station 6 between the section 13 and the respective section 18. The assembly 36 further comprises two deflectors 37 arranged on the table 30 and converging towards one another and towards the station 6 to divide the products entering the station 7 and divert them towards a respective conveyor 24.

[0033] In figure 3, three plants 35 are arranged parallel to one another to feed respective machines 3.

[0034] The plants 35 share a common loading station 5 and are fed by a sorting assembly 40, which is located immediately downstream of the station 5 and upstream of the feeding conveyors 10 and is controlled by the unit 34 to receive the products 2 from the station 5 and distribute them among the conveyors 10.

[0035] Conveniently, the sorting assembly 40 comprises a buffer 41 for temporarily storing the products coming from the station 5 and which is also controlled by the control unit 34.

[0036] From the above description it is clear that, above all, the plants 1, 35 described herein simplify the retrieval of the products 2 not transferred onto the conveyor or conveyors 15 feeding the respective machines 3. This is essentially due to the fact that the products 2B to be retrieved are sent back to the transfer station 6, conveyed inside said station 6 in a counter-flow direction with respect to the products entering said station 6, and are picked up and placed on the conveyors 15 so as to form part of the flows B sent to the machines 3.

[0037] In addition to this, the products 2B are picked up in the station 6 by the same robots that are used to transfer the products 2 conveyed by the conveyor 10, that is to say, using robots that are already present in the plant without the need for additional or dedicated robots, thus limiting the costs involved and the overall dimensions.

[0038] The reduction of the costs and of the overall dimensions of the plants 1 and 35 is also due to the method used to return the retrieved products 2B to the station 6. In addition to a normal motor-powered return conveyor, the plant also comprises simple static diverting and conveying walls that are much more straightforward and economical than the dedicated robots used in the known solutions.

[0039] Lastly, the creation of a counter-flow of retrieved products 2B inside the transfer station 6 not only permits the re-insertion of almost all of the products, but also always permits the formation of an ordered and continuous sequence of products on the conveyor or conveyors 15, so that all the problems associated with the feeding of discontinuous sequences, or of sequences in which there are gaps where products have not been transferred, are eliminated at source.

[0040] Lastly, from the above description it is clear that modifications and variations may be made to the plants 1 and 35 described herein.

[0041] In particular, the different sections of the conveyors need not be aligned in a rectilinear direction or parallel to the direction 4, but could form different angles between them.

[0042] Moreover, the groups 20 of robots 21 could be arranged in a different way from that described herein by way of example, and the sections 13, 18 and 27 could be arranged differently inside the station 6. Specifically, the sections 13, 18 and 27 need not be coplanar.

Claims

1. Plant for feeding products (2), in particular confectionery products, to a packaging machine (3); the plant (1) comprising a product transfer station (6); a retrieval station (7) for retrieving products (2B) not transferred in said transfer station (6); a product feeding conveyor (10) having a first transport section (13) extending through said transfer station (6), and an unloading section (14) arranged in said retrieval station (7); at least one output conveyor (15) for the output of at least some of said products (2) from said transfer station (6) and having a second transport section (18) extending in said transfer station (6); actuating means to move said first (13) and second (18) transport sections in rectilinear directions parallel to one another and in a same feeding direction; a plurality of robots (21) located in said transfer station (6) and suitable to move at least some of the products (2) from the first transport section (13) to said second transport section (18); and retrieval means (23) for retrieving the products (2A) from said retrieval station (7); the plant being **characterised in that** said retrieval means (23) comprise at least one retrieval conveyor (24) having a product input section (26) communicating with said retrieval station (7) and a third transport section (27), extending in said transfer station (6), parallel to said first (13) and second (18) transport sections, and additional actuating means for actuating said third transport section (27) to move said third transport section (27) in the opposite direction to the feeding directions of said first (13) and second (18) transport sections and **in that** said robots (21) configured to transfer the products (2) from the first (13) to the second transport section (18) are the same used to pick up the products (2B) from the third transport section (27) and to move the products (2B) to the second transport section (18).

2. Plant as claimed in claim 1, **characterised in that** said first (13), second (18) and third (27) transport sections are coplanar.

3. Plant as claimed in claim 2, **characterised in that** said third transport section (27) extends longitudinally between said first (13) and second (18) transport sections.

4. Plant as claimed in any one of the preceding claims, **characterised in that** said retrieval means (23) further comprise fixed deflecting means (29) arranged in said retrieval station (7) to push said products (2B) to be retrieved towards the input section (26) of said retrieval conveyor (24).

5. Plant as claimed in claim 4, **characterised in that** said fixed deflecting means comprise at least one sloping partition (31) .

6. Plant as claimed in any one of the preceding claims, **characterised by** comprising a pair of said output conveyors (15) and a pair of said retrieval conveyors (24); in said transfer station (6), the second transport sections (18) being arranged on opposite longitudinal sides of said feeding conveyor (24) and each of said third transport sections (27) extending between said feeding conveyor (10) and a respective said second transport section (18).

7. Plant as claimed in claim 6, **characterised by** comprising a product loading station (5) and sorting means (29) arranged downstream of said loading station (5) and upstream of said feeding conveyor (24) to direct the products arriving from said loading station (5) along a first and at least a second different path.

8. Plant as claimed in claim 7, **characterised in that** said sorting means (29) comprise a buffer for temporarily storing said products.

9. Method for feeding products (2), in particular confectionery products, to a packaging machine (3) using a plant (1) as defined in claim 1; the method comprising the steps of conveying the products (2) to be transferred through a product transfer station (6) by means of a first transport section (13) of a feeding conveyor (10), of picking up at least some of the products (2) to be transferred, by means of robots (21), and transferring them to a second transport section (18) of an output conveyor (15) arranged in said transfer station (6); the second transport section (18) conveying the transferred products (2A) in a second direction parallel to the first direction and in the same feeding direction as the products (2) to be transferred, of conveying, by means of said feeding conveyor (10), the non-transferred products onto said second transport section (18) in a product retrieval station (7), and of retrieving the products (2B) arranged in said retrieval station (7); the method being **characterised in that** the retrieval of said products arranged in the retrieval station (7) is achieved by moving said products (2B) to be retrieved onto a retrieval conveyor (24); by inserting said products into said transfer station (6) by conveying them in the transfer station (6) along a parallel and opposite direction to the feeding directions of the products to be transferred and being transferred, arranged on the first (13) and, respectively, on the second transport section (18); by picking up the products (2B) to be retrieved using the same robots (21) used to transfer the products (2) from the first (13) to the second transport section (18) ; and by arranging them on said second transport section (18) of the output conveyor (15) among the products being conveyed by said output conveyor (15).

10. Method as claimed in claim 9, **characterised in that** the transfer of the products (2B) to be retrieved on the second transport section (18) of the output conveyor (15) is alternated with the transfer of the products picked up by the first transport section (13).

11. Method as claimed in claim 9 or 10, **characterised in that** in said transfer station (6) the products (2) to be transferred are conveyed along respective coplanar rectilinear directions.

12. Method as claimed in any one of the claims from 9 to 11, **characterised in that** the products (2B) to be retrieved are moved inside said transfer station (6) by conveying them between a flow of products to be transferred and a flow of transferred products (2A).

13. Method as claimed in any one of the claims from 9 to 12, **characterised in that** the movement of said products (2B) to be retrieved, arranged in said retrieval station (7), is achieved by moving the products onto a support surface and pushing the products towards said retrieval conveyor (24) without lifting them from the support surface.

14. Method as claimed in any one of the claims from 9 to 13, **characterised in that** the products to be transferred are fed to a sorting assembly (23) and the transferred products (2A) are sorted onto two or more product feeding conveyors (10) in the transfer station (6) .

15. Method as claimed in claim 14, **characterised in that** at least some of said products (2A) are stored in a storage buffer during the sorting of the products.

Patentansprüche

1. Anlage zum Zuführen von Produkten (2), insbesondere Süßwarenprodukte, zu einer Verpackungsmaschine (3); die Anlage (1) aufweisend
eine Produkttransferstation (6);
eine Entnahmestation (7) zum Entnehmen von Produkten (2B), die nicht in die Transferstation (6) transferiert wurden;
ein Produktzuführfördermittel (10) mit einem ersten Transportabschnitt (13), der sich durch die Transferstation (6) erstreckt, und einem Entladeabschnitt (14), der in der Entnahmestation (7) angeordnet ist;
mindestens ein Ausfördermittel (15) für die Ausgabe von zumindest einigen der Produkte (2) aus der Transferstation (6), und einen zweiten Transportabschnitt (18) aufweisend, der sich in der Transferstation (6) erstreckt;
Betätigungsmittel, um die ersten (13) und die zweiten (18) Transportabschnitte in geradlinige Richtungen parallel zueinander und in die gleiche Zuführrichtung zu bewegen;
mehrere Roboter (21), die in der Transferstation (6) vorgesehen sind und geeignet sind, um zumindest einige der Produkte (2) von dem ersten Transportabschnitt (13) zum zweiten Transportabschnitt (18) zu bewegen;
und Entnahmemittel (23) um die Produkte (2A) von der Entnahmestation (7) zu entnehmen;
wobei die Anlage **dadurch gekennzeichnet ist, dass**
die Entnahmemittel (23) mindestens ein Entnahmefördermittel (24), das einen Produkteingabeabschnitt (26) aufweist, der mit der Entnahmestation (7) und einem dritten Transportabschnitt (27) kommuniziert , der sich parallel zum ersten (13) und zweiten (18) Transportabschnitt in der Transferstation (6) erstreckt, und zusätzliche Betätigungsmittel als Antrieb für den dritten Transportabschnitt (27)

aufweisen, um den dritten Transportabschnitt (27) in die Gegenrichtung zu der Zuführrichtung der ersten (13) und zweiten (18) Transportabschnitte zu bewegen und dadurch, dass die Roboter (21), die geeignet sind, die Produkte (2) von dem ersten (13) zum zweiten Transportabschnitt (18) zu transferieren, die gleichen sind, wie diejenigen, die verwendet werden, um die Produkte (2B) von dem dritten Transportabschnitt (27) aufzunehmen und um die Produkte (2B) zu dem zweiten Transportabschnitt (18) zu bewegen.

2. Anlage nach Anspruch 1 **dadurch gekennzeichnet, dass** die ersten (13), zweiten (18) und dritten (27) Transportabschnitte in der gleichen Ebene liegen.

3. Anlage nach Anspruch 2 **dadurch gekennzeichnet, dass** sich der dritte Transportabschnitt (27) in Längsrichtung zwischen dem ersten (13) und zweiten (18) Transportabschnitten erstreckt.

4. Anlage nach einem der vorhergehenden Ansprüche **dadurch gekennzeichnet, dass** die Entnahmemittel (23) ferner feste Ablenkmittel (29) aufweisen, die in der Entnahmestation (7) angeordnet sind, um die Produkte (2B), die entnommen werden sollen, zu dem Eingabeabschnitt (26) des Entnahmefördermittels (24) zu drücken.

5. Anlage nach Anspruch 4 **dadurch gekennzeichnet, dass** die festen Ablenkmittel mindestens eine schräge Trennwand (31) aufweisen.

6. Anlage nach einem der vorhergehenden Ansprüche **dadurch gekennzeichnet, dass** ein Paar von den Ausfördermitteln (15) und ein Paar von den Entnahmefördermitteln (24) vorhanden sind; wobei
in der Transferstation (6) die zweiten Transportabschnitte (18) gegenüber der länglichen Seiten des Zuführfördermittels (24) angeordnet sind und sich jeder der dritten Transportabschnitte (27) zwischen dem Zuführfördermittel (10) und einem entsprechenden zweiten Transportabschnitt (18) erstreckt.

7. Anlage nach Anspruch 6 **dadurch gekennzeichnet, dass** eine Produktladestation (5) und Sortiermittel (29) vorhanden sind, die nachgelagert an die Ladestation (5) und vorgelagert von dem Zuführfördermittel (24) angeordnet sind, um die Produkte, die von der Ladestation (5) ankommen, entlang einem ersten und mindestens einem zweiten anderen Pfad zu leiten.

8. Anlage nach Anspruch 7 **dadurch gekennzeichnet, dass** die Sortiermittel (29) einen Speicher aufweisen, um die Produkte temporär zu lagern.

9. Verfahren zum Zuführen von Produkten (2), insbesondere Süßwarenprodukte, zu einer Verpackungsmaschine (3) unter Verwendung einer Anlage (1), wie in Anspruch 1 definiert; das Verfahren die Schritte aufweisend

Befördern der zu transferierenden Produkte (2) durch eine Produkttransferstation (6) hindurch durch einen ersten Transportabschnitt (13) eines Zuführfördermittels (10),
Aufnehmen von zumindest einigen der zu transferierenden Produkte (2) durch Roboter (21) und Transferieren dieser zu einem zweiten Transportabschnitt (18) eines Ausfördermittels (15), das in der Transferstation (6) angeordnet ist;

wobei der zweite Transportabschnitt (18) die transferierten Produkte (2A) in eine zweite Richtung befördert, die parallel zu der ersten Richtung ist und die gleiche Zuführrichtung wie die zu transferierenden Produkte (2) hat,

Befördern der nicht transferierten Produkte durch die Zuführfördermittel (10) auf den zweiten Transportabschnitt (18) in eine Produktentnahmestation (7),
und Entnehmen der Produkte (2B), die in der Entnahmestation (7) angeordnet sind; wobei

das Verfahren **dadurch gekennzeichnet ist, dass**

das Entnehmen der Produkte, die in der Entnahmestation (7) angeordnet sind, erreicht wird durch das Bewegen der zu entnehmenden Produkte (2B) auf ein Entnahmefördermittel (24);
durch das Einführen der Produkte in die Transferstation (6),
durch das Befördern dieser entlang einer parallelen und der Zuführrichtung entgegengesetzten Richtung der zu transferierenden Produkte und der transferierten Produkte, die auf dem ersten (13) und entsprechend auf dem zweiten Transportabschnitt (18) angeordnet sind;
durch das Aufnehmen der zu entnehmenden Produkte (2B) durch Nutzen der gleichen Roboter (21), die verwendet werden um die Produkte (2) von dem ersten (13) zu dem zweiten Transportabschnitt (18) zu transferieren;
und durch Anordnen von diesen auf dem zweiten Transportabschnitt (18) des Ausfördermittels (15) zwischen den Produkten, die durch das Ausfördermittel (15) befördert werden.

10. Verfahren nach Anspruch 9 **dadurch gekennzeichnet, dass** der Transfer der Produkte (2B), die auf dem zweiten Transportabschnitt (18) des Ausfördermittels (15) entnommen werden sollen, mit dem Transfer von den Produkten, die von dem ersten Transportabschnitt (13) aufgenommen werden, ab-

wechselt.

11. Verfahren nach Anspruch 9 oder 10 **dadurch gekennzeichnet, dass** die zu transferierenden Produkte (2) in der Transferstation (6) entlang entsprechend koplanar geradliniger Richtungen befördert werden.

12. Verfahren nach einem der Ansprüche 9 bis 11 **dadurch gekennzeichnet, dass** die zu entnehmenden Produkte (2B) in der Transferstation (6) zwischen einem Fluss an zu transferierenden Produkten und einem Fluss an transferierten Produkten (2A) durch Beförderung bewegt werden.

13. Verfahren nach einem der Ansprüche 9 bis 12 **dadurch gekennzeichnet, dass** die Bewegung der zu entnehmenden Produkte (2B), die in der Entnahmestation (7) angeordnet sind, durch Bewegen der Produkte auf eine Auflagefläche und Schieben der Produkte zu dem Entnahmefördermittel (24), ohne diese von der Auflagefläche zu heben, erreicht wird.

14. Verfahren nach einem der Ansprüche 9 bis 13 **dadurch gekennzeichnet, dass** die zu transferierenden Produkte einer Sortieranordnung (23) zugeführt werden und, dass die zu transferierenden Produkte (2A) auf zwei oder mehr Produktzuführfördermittel (10) in der Transferstation (6) sortiert werden.

15. Verfahren nach Anspruch 14 **dadurch gekennzeichnet, dass** mindestens einige der Produkte (2A) in einem Lagerspeicher während des Sortierens der Produkte gelagert werden.

Revendications

1. Installation pour distribuer des produits (2), en particulier des produits de confiserie, jusqu'à une machine d'emballage (3) ; l'installation (1) comprenant une station de transfert de produits (6) ; une station d'extraction (7) pour extraire des produits (2B) non transférés dans ladite station de transfert (6) ; un transporteur de distribution de produits (10) comportant une première section de transport (13) s'étendant à travers ladite station de transfert (6), et une section de déchargement (14) agencée dans ladite station d'extraction (7) ; au moins un transporteur de sortie (15) pour la sortie d'au moins certains desdits produits (2) de ladite station de transfert (6) et comportant une deuxième section de transport (18) s'étendant dans ladite station de transfert (6) ; des moyens d'actionnement pour déplacer lesdites première (13) et deuxième (18) sections de transport dans des directions rectilignes parallèles et dans une même direction de distribution ; une pluralité de robots (21) situés dans ladite station de transfert (6) et aptes à déplacer au moins certains des produits (2) de la première section de transport (13) à ladite deuxième section de transport (18) ; et des moyens d'extraction (23) pour extraire les produits (2A) de ladite station d'extraction (7) ; l'installation étant **caractérisée en ce que** lesdits moyens d'extraction (23) comprennent au moins un transporteur d'extraction (24) comportant une section d'entrée de produits (26) communiquant avec ladite station d'extraction (7) et une troisième section de transport (27), s'étendant dans ladite station de transfert (6), parallèle auxdites première (13) et deuxième (18) sections de transport, et des moyens d'actionnement supplémentaires pour actionner ladite troisième section de transport (27) afin de déplacer ladite troisième section de transport (27) dans la direction opposée aux directions de distribution desdites première (13) et deuxième (18) sections de transport et **en ce que** lesdits robots (21) configurés pour transférer les produits de la première (13) à la deuxième section de transport (18) sont les mêmes que ceux employés pour prélever les produits (2B) de la troisième section de transport (27) et déplacer les produits (2B) jusqu'à la deuxième section de transport (18).

2. Installation selon la revendication 1, **caractérisée en ce que** lesdites première (13), deuxième (18) et troisième (27) sections de transport sont coplanaires.

3. Installation selon la revendication 2, **caractérisée en ce que** ladite troisième section de transport (27) s'étend longitudinalement entre lesdites première (13) et deuxième (18) sections de transport.

4. Installation selon l'une quelconque des revendications précédentes, **caractérisée en ce que** lesdits moyens d'extraction (23) comprennent, en outre, des moyens de déviation fixes (29) agencés dans ladite station d'extraction (7) pour pousser lesdits produits (2B) devant être extraits vers la section d'entrée (26) dudit transporteur d'extraction (24).

5. Installation selon la revendication 4, **caractérisée en ce que** lesdits moyens de déviation fixes comprennent au moins une cloison inclinée (31).

6. Installation selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**elle comprend une paire desdits transporteurs de sortie (15) et une paire desdits transporteurs d'extraction (24) ; dans ladite station de transfert (6) les deuxièmes sections de transport (18) étant agencées sur des côtés longitudinaux opposés dudit transporteur d'extraction (24) et chacune desdites troisièmes sections de transport (27) s'étendant entre ledit transporteur de distribution (10) et unedite deuxième section de transport (18) respective.

7. Installation selon la revendication 6, **caractérisée en ce qu'**elle comprend une station de chargement de produits (5) et des moyens de tri (29) agencés en aval de ladite station de chargement (5) et en amont dudit transporteur de distribution (24) pour diriger les produits arrivant de ladite station de chargement (5) le long d'une première et d'au moins une deuxième trajectoire différente.

8. Installation selon la revendication 7, **caractérisée en ce que** lesdits moyens de tri (29) comprennent une zone tampon pour stocker provisoirement lesdits produits.

9. Procédé pour distribuer des produits (2), en particulier des produits de confiserie, jusqu'à une machine d'emballage (3) utilisant une installation (1) telle que définie dans la revendication 1 ; le procédé comprenant les étapes consistant à transporter les produits (2) devant être transférés à travers une station de transfert de produits (6) au moyen d'une première section de transport (13) d'un transporteur de distribution (10), à prélever au moins certains des produits (2) devant être transférés, au moyen de robots (21), et les transférer jusqu'à une deuxième section de transport (18) d'un transporteur de sortie (15) agencé dans ladite station de transfert (6) ; la deuxième section de transport (18) transportant les produits transférés (2A) dans une deuxième direction parallèle à la première direction et dans la même direction de distribution que les produits (2) devant être transférés, à transporter, au moyen dudit transporteur de distribution (10), les produits non transférés sur ladite deuxième section de transport (18) dans une station d'extraction de produits (7), et à extraire les produits (2B) agencés dans ladite station d'extraction (7) ; le procédé étant **caractérisé en ce que** l'extraction desdits produits agencés dans la station d'extraction (7) est obtenue en déplaçant lesdits produits (2B) devant être extraits sur un transporteur d'extraction (24) ; à insérer lesdits produits dans ladite station de transfert (6) en les transportant dans la station de transfert (6) le long d'une direction parallèle et opposée aux directions de distribution des produits devant être transférés et étant transférés, agencés sur la première (13) et, respectivement, sur la deuxième section de transport (18) ; à prélever les produits (2B) devant être extraits en utilisant les mêmes robots (21) que ceux employés pour transférer les produits (2) de la première (13) à la deuxième section de transport (18) ; et à agencer les produits sur la deuxième section de transport (18) du transporteur de sortie (15) parmi les produits étant transportés par ledit transporteur de sortie (15).

10. Procédé selon la revendication 9, **caractérisé en ce que** le transfert des produits (2B) devant être extraits sur la deuxième section de transport (18) du transporteur de sortie (15) est alterné avec le transfert des produits prélevés par la première section de transport (13).

11. Procédé selon la revendication 9 ou 10, **caractérisé en ce que**, dans ladite station de transfert (6) les produits (2) devant être transférés sont transportés le long de directions rectilignes coplanaires respectives.

12. Procédé selon l'une quelconque des revendications 9 à 11, **caractérisée en ce que** les produits (2B) devant être extraits sont déplacés à l'intérieur de ladite station de transfert (6) en étant transportés entre un flux de produits devant être transférés et un flux de produits (2A) transférés.

13. Procédé selon l'une quelconque des revendications 9 à 12, **caractérisé en ce que** le mouvement desdits produits (2B) devant être extraits, agencés dans ladite station d'extraction (7), est obtenu en déplaçant les produits sur une surface de support et en poussant les produits vers ledit transporteur d'extraction (24) sans les soulever de la surface de support.

14. Procédé selon l'une quelconque des revendications 9 à 13, **caractérisé en ce que** les produits devant être transférés sont distribués jusqu'à un ensemble de tri (23) et les produits transférés (2A) sont triés sur deux ou plus de deux transporteurs de distribution de produits (10) dans la station de transfert (6).

15. Procédé selon la revendication 14, **caractérisé en ce qu'**au moins certains desdits produits (2A) sont stockés dans une zone tampon de stockage durant le tri des produits.

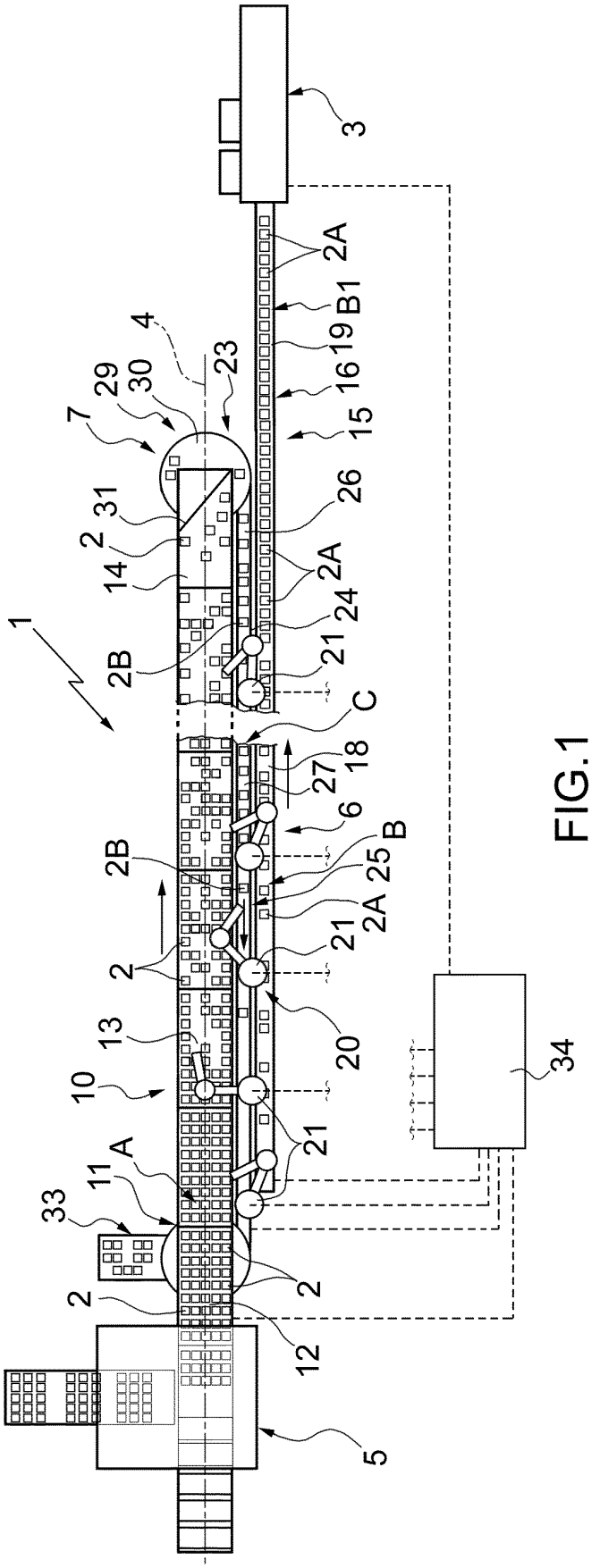

3
2A
B1
19
16
15
4
23
29
30
7
31
26
2
14
2A
24
1
21
2B
C
18
27
6
B
25
2A
21
2B
2
20
13
34
10
21
A
11
33
2
2
12
5

FIG.1

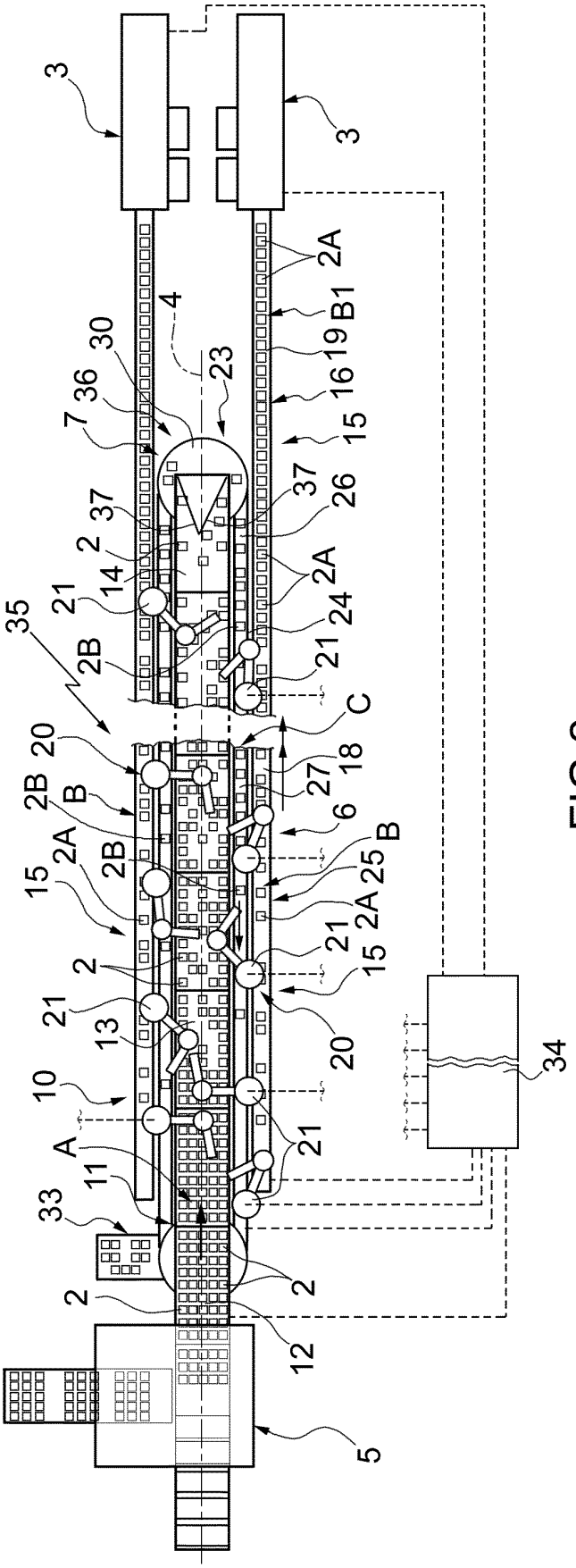
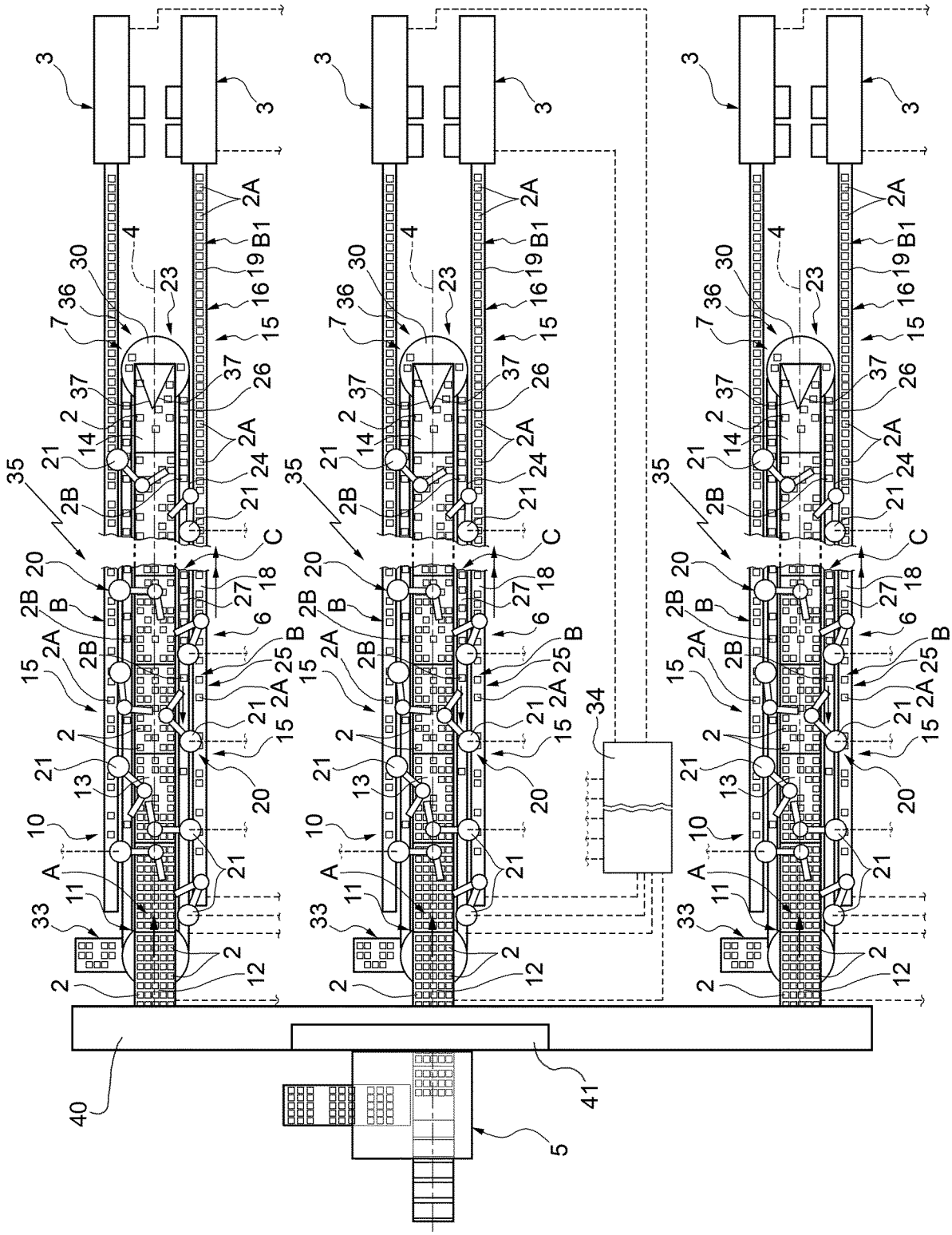

3
3
2A
B1
19
16
15
4
23
30
36
7
37
37
26
2
14
2A
21
24
35
21
2B
C
20
18
27
2B
B
6
2A
2B
B
25
15
2A
21
15
2
21
20
13
34
10
21
A
11
33
2
2
12
5

FIG.2

FIG.3


3
4
23
30
36
7
37
26
2A
B1
19
16
15
2
14
21
24
35
2B
C
20
18
27
6
B
25
A
10
11
33
12
40
41
5
34

REFERENCES CITED IN THE DESCRIPTION

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