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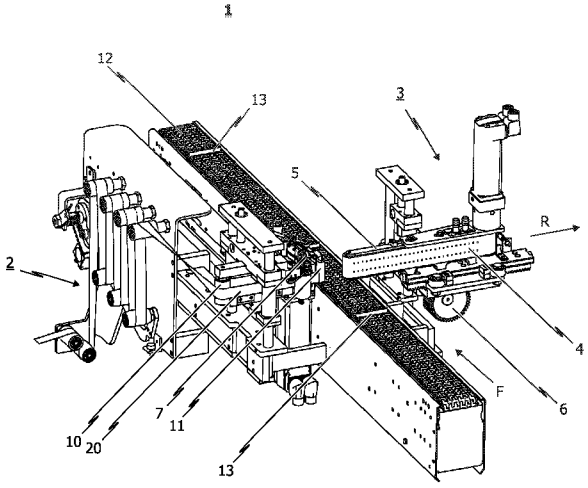

FIG. 1

(57) Abstract: The invention relates to a banderoling unit (1) having a banderole dispensing apparatus (2) for providing a banderole tape (20) and a banderole transport apparatus (3) for transporting the banderole tape (20) provided by the banderole dispensing apparatus (2). The banderole transport apparatus (3) is movable between a first position, in which an end region of the provided banderole tape (20) is receivable by the banderole transport apparatus (3), and a second position, in which the banderole transport apparatus (3) is distanced from the banderole dispensing apparatus (2) with the received end region of the banderole tape (20) in such a way that the product or product group (21) to be banderoled is transportable or conveyable in the conveying direction (F) between the banderole dispensing apparatus (2) and the banderole transport apparatus (3).

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BANDEROLING UNIT, PACKING MACHINE HAVING A BANDEROLING UNIT, AND METHOD FOR BANDEROLING A PRODUCT OR GROUP OF PRODUCTS

Description

The present invention relates generally to packaging methods and packaging systems. For example, the packaging systems can be packaging machines of a packaging line.

In particular, the invention relates to a system for banderoling products. Banderoling is a process of packaging technology in which objects (products) of the same or different types are gathered/bundled into a unit with a banderole (a tape) made of paper or plastic materials (for example polypropylene and polyethylene films).

From the publication EP 1 725 454B1, a system for banderoling stacks with a feed part and a relatively movable binding part is known, wherein the banderoles in the binding part are guided to a loop around the stack, tightened by retracting the banderoles, and finally clamped, cut, and connected.

A banderoling machine for banderoling packages with a belt is known from the publication EP 1 479 611 B1, wherein an ultrasonic welding apparatus with a sonotrode is provided for closing the belt loop surrounding the package, which can be motorly connected to and detached from the belt loop via a mechanism.

One disadvantage of the previously known systems for banderoling products is that the wrapping/turning of the banderoling around the product to be banderoled is relatively complex and time consuming.

Accordingly, the problem of the present invention is to specify an apparatus and a method for banderoling products, wherein an increased number of strokes, in particular, is achievable in low-disruption operation.

With respect to the apparatus, this problem is solved by the subject-matter of the independent claim 1, wherein advantageous further developments of the banderoling unit according to the invention are specified in the dependent claims 2 to 13.

With respect to the method, the problem underlying the invention is solved by the subject-matter of the parallel claim 15.

Accordingly, the invention relates in particular to a banderoling unit for attaching a banderole to a product transported or conveyed in a conveying direction or to a product group transported or conveyed in a conveying direction, in particular to a product container transported or conveyed in a conveying direction, in particular a film hose container.

The banderoling unit according to the invention comprises a banderole dispensing apparatus and a banderole transport apparatus. The banderole dispensing apparatus serves to provide a banderole tape or a banderole tape portion. The banderole tape or banderole tape portion provided by the banderole dispensing apparatus is transported into the transporting or conveying path of the product to be banderoled with the aid of the banderole transport apparatus.

According to the invention, it is provided in this context, in particular, that the banderole transport apparatus is movable between a first position, in which an end region of the banderole tape or banderole tape portion provided by the banderole dispensing apparatus is receivable by the banderole transport apparatus, and a second position, in which the banderole transport apparatus is distanced from the banderole dispensing apparatus with the end region of the banderole tape or banderole tape portion provided by the banderole dispensing apparatus such that the product to be banderoled or the product group to be banderoled is transportable or conveyable in the conveying direction between the banderole dispensing apparatus and the banderole transport apparatus.

For example, the individual products to be banderoled are grouped in advance in a suitable number on a conveying unit and fed to the banderoling unit by carrying elements and passed through the region between the banderole dispensing apparatus and the banderole transport apparatus (when the banderole transport apparatus is in its second position). The banderole running transversely to the product flow is placed around the container so that, due to the conveyance of the product or product group through the region between the banderole dispensing apparatus and the banderole transport apparatus, the product or product group is automatically wrapped by the banderole tape.

According to preferred implementations of the banderoling unit, the banderoling apparatus comprises a particularly circumferential vacuum transport belt and a drive associated with the vacuum transport belt, in particular a linear drive. The drive

configured in particular as a linear drive and associated with the vacuum transport apparatus, is configured so as to move the vacuum transport apparatus between the first and the second position.

In this embodiment of the banderoling unit, it is only necessary to use the drive associated with the vacuum transport apparatus in order to move it between the first and second positions in order to be able to banderole a product or a product group. The movement path is relatively small, because only the banderole transport apparatus or the vacuum transport belt of the banderole transport apparatus has to be removed far enough from the banderole dispensing apparatus that a sufficiently large gap is formed between the banderole dispensing apparatus and the banderole transport apparatus, through which the product or product group to be banderoled can pass.

In this context in particular, it is provided that the drive configured preferably as a linear drive and associated with the vacuum transport belt is configured so as to move the vacuum transport belt obliquely and preferably transversely to the conveying direction of the product or product group to be banderoled between the first and the second position (and vice versa).

According to implementations of the banderoling unit according to the invention, the vacuum transport belt is configured as a body surrounding the vacuum transport belt, wherein the body associated with the vacuum transport belt extends in a longitudinal direction corresponding to the direction in which the banderole transport apparatus is movable relative to the banderole dispensing apparatus between the first and second positions.

The body associated with the vacuum transport belt preferably has – when viewed in the conveying direction of the product or product group to be banderoled – a first downstream surface and an opposing second surface, wherein the vacuum transport apparatus moves on the first surface of the body associated with the vacuum transport apparatus in the direction that corresponds to the direction when the banderole transport apparatus is moved from its first position to its second position.

With respect to the banderole dispensing apparatus, according to embodiments of the banderoling unit according to the invention, it is provided that it comprises a dispensing head and a banderole feeder. The banderole feeder is configured to feed the banderole tape or the banderole tape portion to the dispensing head.

The dispensing head preferably comprises a guide, in particular in the form of a guide surface, in order to feed the end region of the banderole tape or banderole tape portion fed by the banderole feeder to the banderole transport apparatus and in particular to a transfer region between the banderole dispensing apparatus and in particular the guide of the dispensing head and the banderole transport apparatus.

Preferably, the guide of the dispensing head, which is configured in particular as a guide surface, is designed so as to guide the banderole tape fed by the banderole feeder or the banderole tape portion fed by the banderole feeder in the direction of the banderole transport apparatus in a plane running preferably perpendicular to the conveying direction of the product or product group to be banderoled.

According to implementations of the banderoling unit, the plane in which the guide of the dispensing head, which is configured in particular as a guide surface, feeds the banderole tape or banderole tape portion fed by the banderole feeder to the banderole transport apparatus at least substantially matches the plane in which a transport surface of the vacuum transport belt of the banderole transport apparatus runs.

In order to support the feeding of the banderole tape or banderole tape portion, according to embodiments of the banderoling unit according to the invention, it is provided that the guide of the dispensing head, which is configured in particular as a guide surface, comprises at least one groove region, which extends at least partially and/or regionally in the longitudinal direction of the guide and is in particular slot-shaped and can be subjected to a vacuum, at least as needed.

In this context, it can be appreciated that the banderoling unit comprises a vacuum generating apparatus associated with the dispensing head and based in particular on the Venturi principle for providing the vacuum, at least as needed, to which the at least one groove region extending at least partially and/or regionally in the longitudinal direction of the guide can be subjected.

According to preferred realizations of the banderoling unit according to the invention, the banderoling unit comprises a separating apparatus that can be controlled as needed, in particular in the form of a separating or cutting knife, for separating the banderole tape fed by the banderole feeder. Preferably, the separating apparatus is preferably received or integrated at least regionally in the guide of the

dispensing head, in particular in an end region of the guide facing the banderole transport apparatus.

The banderole is configured in particular as a self-adhesive banderole and, on a first banderole lateral surface, comprises a self-adhesive or activatable adhesion layer, wherein the opposing second banderole lateral surface does not have any such adhesion layer. In particular, it is provided that the banderole is transported with the banderole transport apparatus via its second banderole lateral surface.

According to further developments of the banderoling unit according to the invention, it is provided that it further comprises a wrapping apparatus, which is configured so as to wrap the opposing end regions of a banderole tape portion – when viewed in the conveying direction of the product or product group – on the downstream rear side of the product or product group, in particular when the product or product group is transported or conveyed through the region between the banderole dispensing apparatus and the banderole transport apparatus in the second position of the banderole transport apparatus. In this context, it is conceivable in particular that the wrapping apparatus preferably comprises a brush and/or roller system for automatically wrapping the end regions of the banderole tape portion. Of course, other solutions are possible, as well.

In particular, a transport apparatus is associated with the banderoling unit according to the invention in order to transport the product or product group to be banderoled to and – when the banderole transport apparatus is in its second position – through the region between the banderole dispensing apparatus and the banderole transport apparatus. The transport apparatus further serves to dispatch the banderoled product or product group after the product or the product group has passed the region between the banderole dispensing apparatus and the banderole transport apparatus.

As already stated, the transport apparatus preferably comprises at least one carrying unit that is movable in the conveying direction.

The invention further relates to a packaging machine for packaging products or product groups, in particular in paper or cardboard material or in film material, wherein the packaging machine comprises at least one paper or cardboard packaging station and/or at least one film packaging station for this purpose.

In this context, it is provided that the packaging machine further comprises at least one banderoling unit of the type according to the invention described above, which is – when viewed in the conveying direction of the products or product groups – downstream of the at least one paper or cardboard packaging station or the at least one film packaging station.

The paper or cardboard packaging station is configured so as to package the products or product groups fed to the paper or cardboard packaging station with paper or cardboard material, for example by cutting the product(s) into one or more cardboard cuts. Likewise, the film packaging station is configured so as to wrap the products fed to the film packaging station with a shrink or stretch film.

The invention further relates to a banderoling unit for banderoling a product or product group transported or conveyed in a conveying direction, in particular a product container transported or conveyed in a conveying direction, in particular a film hose container. In the banderoling method according to the invention, a banderoling unit of the type according to the invention described above is preferably used.

The banderoling method is characterized in that initially a banderole tape or banderole tape portion is provided with the aid of a banderole dispensing apparatus. Subsequently, an end region of the provided banderole tape or banderole tape portion is received in a first position of a vacuum transport belt of a banderole transport apparatus. Thereafter, the banderole transport apparatus with the vacuum transport belt and the end region of the banderole tape or banderole tape portion received by the vacuum transport belt is moved into a second position such that a gap region is formed between the banderole dispensing apparatus and the banderole transport apparatus, through which gap the product or product group to be banderoled can pass in a corresponding conveying direction. Simultaneously, with the aid of the vacuum transport belt, the banderole tape or banderole tape portion received by said vacuum transport belt is transported further in the transport direction of the banderole transport apparatus.

The product or product group to be banderoled is then conveyed through the gap region between the banderole dispensing apparatus and the banderole transport apparatus, as a result of which the banderole tape or banderole tape portion subtended by the product or product group in the gap region is at least regionally carried along with the product or product group, such that the banderole tape or

banderole tape portion is at least regionally wrapped around the product or product group when the product or product group is conveyed through the gap region between the banderole dispensing apparatus and the banderole transport apparatus.

An exemplary embodiment of the present invention is described in further detail below, with reference to the accompanying drawings.

The following are shown:

FIG. 1 schematically and in an isometric view, an exemplary embodiment of the banderoling unit according to the invention without products/product groups to be banderoled;

FIG. 2 schematically and in an isometric view, the exemplary embodiment of the banderoling unit according to the invention according to FIG. 1 with products/product groups to be banderoled; and

FIGS. 3-7 schematically and in a top plan view, the exemplary embodiment of the banderoling unit according to the invention according to FIG. 1 in various states for demonstrating the functionality of the banderoling unit.

The schematic embodiment of the banderoling unit 1 according to the invention shown in the drawings substantially comprises a banderole dispensing apparatus 2 and a banderole transport apparatus 3.

The banderole transport apparatus 3 is movable between a first position (cf. FIG. 3 or FIG. 4) and a second position (cf. FIG. 5). In the first position (cf. FIG. 3 or FIG. 4), an end region of a banderole tape 20 or banderole tape portion provided by the banderole dispensing apparatus 2 is receivable by the banderole transport apparatus 3. By contrast, in the second position (cf. FIG. 5), the banderole transport apparatus 3 is distanced from the banderole dispensing apparatus 2 with the end region of the banderole tape 20 or banderole tape portion provided by the banderole dispensing apparatus 2 such that the product to be banderoled or the product group 21 to be banderoled is transportable or conveyable in the conveying direction of the product or product group 21 between the banderole dispensing apparatus 2 and the banderole transport apparatus 3.

The banderole transport apparatus 3 of the embodiment of the banderoling unit 1 according to the invention shown in the drawings is characterized in that it comprises a circumferential vacuum transport belt 4 and a drive 6, in particular a linear drive, associated with the vacuum transport belt 4. The drive 6 configured in particular as a linear drive and associated with the vacuum conveyor belt 4 is configured so as to move the vacuum conveyor belt 4 between the first and the second position.

In this context, it is provided in particular that the drive 6 configured in particular as a linear drive and associated with the vacuum transport belt 4 is configured so as to move the vacuum transport belt 4 preferably transversely to the conveying direction F of the product or product group 21 to be banderoled between the first and the second position and vice versa.

The vacuum transport apparatus 4 is embodied as a vacuum transport apparatus 4 surrounding the body 5 associated with the vacuum transport apparatus 4. The body 5 associated with the vacuum transport belt 4 extends in a longitudinal direction corresponding to the direction R in which the banderole transport apparatus 3 is movable between the first and second position relative to the banderole dispensing apparatus 2.

The body 5 associated with the vacuum transport belt 4 has – when viewed in the conveying direction F of the product or product group 21 to be banderoled – a first downstream surface and an opposite second surface. The vacuum transport belt 4 moves on the first surface of the body 5 associated with the vacuum transport belt 4 in the direction corresponding to the direction R when the banderole transport apparatus 3 is moved from its first position into its second position.

With respect to the banderole dispensing apparatus 2, in the exemplary embodiment of the banderoling unit 1 according to the invention, it is provided that it comprises a dispensing head 7 and a banderole feeder 10. The banderole feeder 10 is configured so as to feed the banderole tape 20 or banderole tape portion to the dispensing head 7.

The drawings in particular show that the dispensing head 7 of the banderole dispensing apparatus 2 comprises a guide, in particular in the form of a guide surface, in order to feed the end region of the banderole tape 20 or banderole tape portion fed by the banderole feeder 10 to the banderole transport apparatus 3 and in

particular to a transfer region between the banderole dispensing apparatus 2 and in particular the guide of the dispensing head 7 and the banderole transport apparatus 3.

It can be seen from the illustration in FIG. 2 that the guide of the dispensing head 7, which is configured in particular as a guide surface, is designed so as to guide the banderole tape 20 fed by the banderole feeder 10 or the banderole tape portion fed by the banderole feeder 10 in the direction of the banderole transport apparatus 3 in a plane running preferably perpendicular to the conveying direction F of the product or product group 21 to be banderoled.

Furthermore, FIG. 2 shows that the plane in which the guide of the dispensing head 7, which is configured in particular as a guide surface, feeds the banderole tape 20 or banderole tape portion fed by the banderole feeder 10 to the banderole transport apparatus 3 at least substantially matches the plane in which a transport surface of the vacuum transport belt 4 of the banderole transport apparatus 3 runs.

The guide of the dispensing head 7, which is configured in particular as a guide surface, comprises at least one groove region, which extends at least partially and/or regionally in the longitudinal direction of the guide and is in particular slot-shaped and can be subjected to a vacuum, at least as needed. For this purpose, the banderoling unit 1 comprises a vacuum generating apparatus associated with the dispensing head 7 and based in particular on the Venturi principle, which is configured so as to provide the vacuum, at least as needed, to which the at least one groove region extending at least partially and/or regionally in the longitudinal direction of the guide can be subjected.

It can also be seen in the drawings that the banderole dispensing apparatus 2 comprises a controllable separating apparatus 11, in particular a separating or cutting blade, for separating the banderole tape 20 fed by the banderole feeder 10. The separating apparatus 11 is preferably received or integrated at least regionally in the guide of the dispensing head 7, in particular in an end region of the guide facing the banderole transport apparatus 3.

The banderole is configured in particular as a self-adhesive banderole and, on a first banderole lateral surface, comprises a self-adhesive or activatable adhesion layer, wherein the opposing second banderole lateral surface is formed without such an adhesion layer. The banderole is transported with the banderole transport apparatus

3, and in particular with the vacuum transport belt 4, via its second banderole lateral surface.

Although not shown in the drawings, it is preferred that the banderoling unit 1 further comprises a wrapping apparatus, which is configured so as to wrap the opposing end regions of a banderole tape portion – when viewed in the conveying direction F of the product or product group 21 – on the downstream rear side of the product or product group 21, in particular when the product or product group 21 is transported or conveyed through the region between the banderole dispensing apparatus 2 and the banderole transport apparatus 3 in the second position of the banderole transport apparatus 3. In this context, it is conceivable that the wrapping apparatus preferably comprises a brush and/or roller system for automatically wrapping the end regions of the banderole tape portion.

As indicated in the drawings, the banderoling unit 1 is associated with a transport apparatus 12 for conveying the product or product group 21 to be banderoled to the banderoling unit 1 and – when the banderoling apparatus 3 is in its second position (cf. FIG. 5) – to transport the product or product group 21 to be banderoled through the region between the banderole dispensing apparatus 2 and the banderole transport apparatus 3. The transport apparatus 12 further serves to dispatch the banderoled product or product group 21, after the product or the product group 21 has passed the region between the banderole dispensing apparatus 2 and the banderole transport apparatus 3.

It is conceivable in this context, for example, that the transport apparatus 12 preferably comprises at least one carrying unit 13 that is movable in the conveying direction F.

The functional procedure for banderoling a product or a product group 21 with the aid of the banderoling unit 1 according to the invention is as follows:

The individual products are grouped in a suitable number in advance on a conveying unit and fed by means of carrying elements to the banderoling unit 1 and pushed through it. The banderole running transversely to the product flow (transversely to the conveying direction F) in the second position of the banderole transport apparatus 3 (cf. FIG. 5) is placed around the container and is separated by the separating or cutting edge of the separating apparatus 11 at the appropriate moment.

The gap to the subsequent (still to be banderoled) product group 21 is used in order to bring the banderoles back across the transport apparatus 12. For this purpose, the vacuum transport belt 4 mounted on a travel track drives to the banderole dispensing apparatus 2 (cf. FIG. 4) in order to take over the pre-dispensed banderoles there.

In order to pre-dispense the banderoles, a compressed air nozzle is integrated in the dispensing head 7 of the banderole dispensing apparatus 2, where a vacuum is generated by means of small groove regions serving as air channels behind the banderoles. The banderoles can thereby be pre-transported as far as the guide of the dispensing head 7 in order to be taken over by the vacuum transport belt 4.

The vacuum transport belt 4 then retracts and pulls the banderoles over the corresponding position for the next product grouping.

The invention is not limited to the schematically illustrated embodiment of the banderoling unit 1 shown in the drawings, but rather results when all of the features disclosed herein are considered together.

List of reference numerals

1 Banderoling unit
2 Banderole dispensing apparatus
3 Banderole transport apparatus
4 Vacuum transport belt
5 Body of the vacuum transport belt
6 Drive/linear drive
7 Dispensing head

10 Banderole feeder
11 Separating apparatus
12 Transport apparatus
13 Carrying unit
20 Banderole tape
21 Product/product group
F Conveying direction
R Direction when moving the banderole transport apparatus from the first position into the second position

Claims

1. A banderoling unit (1) for attaching a banderole to a product transported or conveyed in a conveying direction (F) or to a product group (21) transported or conveyed in a conveying direction (F), in particular to a product container transported or conveyed in a conveying direction (F), in particular a film hose container, wherein the banderoling unit (1) comprises the following:

   - a banderole dispensing apparatus (2) for providing a banderole tape (20) or a banderole tape portion; and
   - a banderole transport apparatus (3) for transporting the banderole tape (20) and/or banderole tape portion provided by the banderole dispensing apparatus (2),

   wherein the banderole transport apparatus (3) is movable between a first position, in which an end region of the banderole tape (20) or banderole tape portion provided by the banderole dispensing apparatus (2) is receivable by the banderole transport apparatus (3), and a second position, in which the banderole transport apparatus (3) is distanced from the banderole dispensing apparatus (2) with the end region of the banderole tape (20) or banderole tape portion provided by the banderole dispensing apparatus (2) such that the product to be banderoled or the product group (21) to be banderoled is transportable or conveyable in the conveying direction (F) between the banderole dispensing apparatus (2) and the banderole transport apparatus (3).

2. The banderoling unit (1) according to claim 1,
   wherein the banderole transport apparatus (3) comprises a vacuum transport belt (4), in particular a circumferential one, and a drive (6) associated with the vacuum transport belt (4), in particular a linear drive, wherein the drive (6), which is configured in particular as a linear drive and is associated with the vacuum transport belt (4), is configured so as to move the vacuum transport belt (4) between the first and the second position.

3. The banderoling unit (1) according to claim 2,
   wherein the drive (6) configured in particular as a linear drive and associated with the vacuum transport belt (4) is configured so as to move the vacuum transport belt (4) obliquely and preferably transversely to the conveying direction (F) of the product or product group (21) to be banderoled between the first and the second position and vice versa.

4. The banderoling unit (1) according to claim 2 or 3,
wherein the vacuum transport belt (4) is configured as a vacuum transport belt (4) surrounding a body (5) associated with the vacuum transport belt (4), wherein the body (5) associated with the vacuum transport belt (4) extends in the longitudinal direction corresponding to the direction (R) in which the banderole transport apparatus (3) is movable relative to the banderole dispensing apparatus (2) between the first and second positions, wherein the body (5) associated with the vacuum transport belt (4) comprises – when viewed in the conveying direction (F) of the product or product group (21) to be banderoled – a first downstream surface and an opposite second surface, wherein the vacuum transport belt (4) moves in the direction on the first surface of the body (5) associated with the vacuum transport belt (4) corresponding to the direction (R) when the banderole transport apparatus (3) is moved from its first position to its second position.

5. The banderoling unit (1) according to any one of claims 1 to 4,
wherein the banderole dispensing apparatus (2) comprises a dispensing head (7) and a banderole feeder (10), wherein the banderole feeder (10) is configured so as to feed the banderole tape (20) or the banderole tape portion to the dispensing head (7), and wherein the dispensing head (7) comprises a guide, in particular in the form of a guide surface, for feeding the end region of the banderole tape (20) or banderole tape portion fed by the banderole feeder (10) to the banderole transport apparatus (3), and in particular to a transfer region between the banderole dispensing apparatus (2), in particular a guide of a dispensing head (7) of the banderole dispensing apparatus (2), and the banderole transport apparatus (3).

6. The banderoling unit (1) according to claim 5,
wherein the guide of the dispensing head (7), which is configured in particular as a guide surface, is designed so as to guide the banderole tape (20) fed by the banderole feeder (10) or the banderole tape portion fed by the banderole feeder (10) in the direction of the banderole transport apparatus (3) in a plane running preferably perpendicular to the conveying direction (F) of the product or product group (21) to be banderoled.

7. The banderoling unit (1) according to claim 5 or 6 in combination with at least claim 2, wherein the plane in which the guide of the dispensing head (7), which is configured in particular as a guide surface, feeds the banderole tape (20) or banderole tape portion to the banderole transport apparatus (3)

at least substantially matches the plane in which a transport surface of the vacuum transport belt (4) of the banderole transport apparatus (3) runs.

8. The banderoling unit (1) according to any one of claims 5 to 7, wherein the guide of the dispensing head (7), which is configured in particular as a guide surface, comprises at least one groove region, which extends at least partially and/or regionally in the longitudinal direction of the guide and is in particular slot-shaped and can be subjected to a vacuum, at least as needed.

9. The banderoling unit (1) according to claim 8, wherein the banderoling unit (1) comprises a vacuum generating apparatus associated with the dispensing head (7) and based in particular on the Venturi principle for providing the vacuum, at least as needed, to which the at least one groove region extending at least partially and/or regionally in the longitudinal direction of the guide can be subjected.

10. The banderoling unit (1) according to any one of claims 5 to 9, wherein the banderole dispensing apparatus (2) comprises a separating apparatus (11) that can be controlled as needed, in particular in the form of a separating knife, for separating the banderole tape (20) fed by the banderole feeder (10), wherein the separating apparatus (11) is preferably received or integrated at least regionally in the guide of the dispensing head (7), in particular in an end region of the guide facing the banderole transport apparatus (3).

11. The banderoling unit (1) according to any one of claims 1 to 10, wherein the banderole is configured in particular as a self-adhesive banderole and, on a first banderole lateral surface, comprises a self-adhesive or activatable adhesion layer, wherein the opposing second banderole lateral surface does not comprise any such adhesion layer, wherein the banderole is preferably transported with the banderole transport apparatus (3) via its second banderole lateral surface.

12. The banderoling unit (1) according to any one of claims 1 to 11, wherein the banderoling unit (1) further comprises a wrapping apparatus, which is configured so as to wrap the opposing end regions of a banderole tape portion – when viewed in the conveying direction (F) of the product or product group (21) – on the downstream rear side of the product or product

group (21), in particular when the product or product group (21) is transported or conveyed through the region between the banderole dispensing apparatus (2) and the banderole transport apparatus (3) in the second position of the banderole transport apparatus (3), wherein the wrapping apparatus preferably comprises a brush and/or roller system for automatically wrapping the end regions of the banderole tape portion.

13. The banderoling unit (1) according to any one of claims 1 to 12, wherein a transport apparatus (12) is associated with the banderoling unit (1) for transporting the product or product group (21) to be banderoled to and – when the banderole transport apparatus (3) is in its second position – through the region between the banderole dispensing apparatus (2) and the banderole transport apparatus (3) and to dispatch the banderoled product or product group (21) after the product or product group (21) has passed the region between the banderole dispensing apparatus (2) and the banderole transport apparatus (3), wherein the transport apparatus (12) preferably comprises at least one carrying unit (13) that is movable in the conveying direction (F).

14. A packaging machine for packaging products or product groups, in particular in paper or cardboard material or in film material, wherein the packaging machine comprises at least one paper or cardboard packaging station and/or at least one film packaging station, wherein the packaging machine further comprises at least one banderoling unit (1) according to any one of claims 1 to 13, which is – when viewed in the conveying direction (F) of the products or product groups – downstream of the at least one paper or cardboard packaging station or the at least one film packaging station.

15. A method for banderoling a product or product group (21) transported or conveyed in a conveying direction (F), in particular a product container transported or conveyed in a conveying direction (F), in particular a film hose container, wherein preferably a banderoling unit (1) according to any of the claims 1 to 13 is used for this purpose, and wherein the method comprises the following method steps:

(i) a banderole tape (20) or banderole tape portion is provided with the aid of a banderole dispensing apparatus (2);

(ii) an end region of the provided banderole tape (20) or banderole tape portion is received in a first position of a vacuum transport belt (4) of a banderole transport apparatus (3);

(iii) the banderole transport apparatus (3) with the vacuum transport belt (4) and the end region of the banderole tape (20) or banderole tape portion received by the vacuum transport belt (4) is moved into a second position such that a gap region is formed between the banderole dispensing apparatus (2) and the banderole transport apparatus (3), through which gap the product or product group (21) to be banderoled can pass in a corresponding conveying direction (F), wherein, with the aid of the vacuum transport belt (4), the banderole tape (20) or banderole tape portion received by said vacuum transport belt is simultaneously transported further in the transport direction of the banderole transport apparatus (3); and

(iv) the product or product group (21) to be banderoled is conveyed through the gap region between the banderole dispensing apparatus (2) and the banderole transport apparatus (3), as a result of which the banderole tape (20) or banderole tape portion subtended by the product or product group (21) in the gap region is at least regionally carried along with the product or product group (21), such that the banderole tape (20) or banderole tape portion is at least regionally wrapped around the product or product group (21) when the product or product group (21) is conveyed.

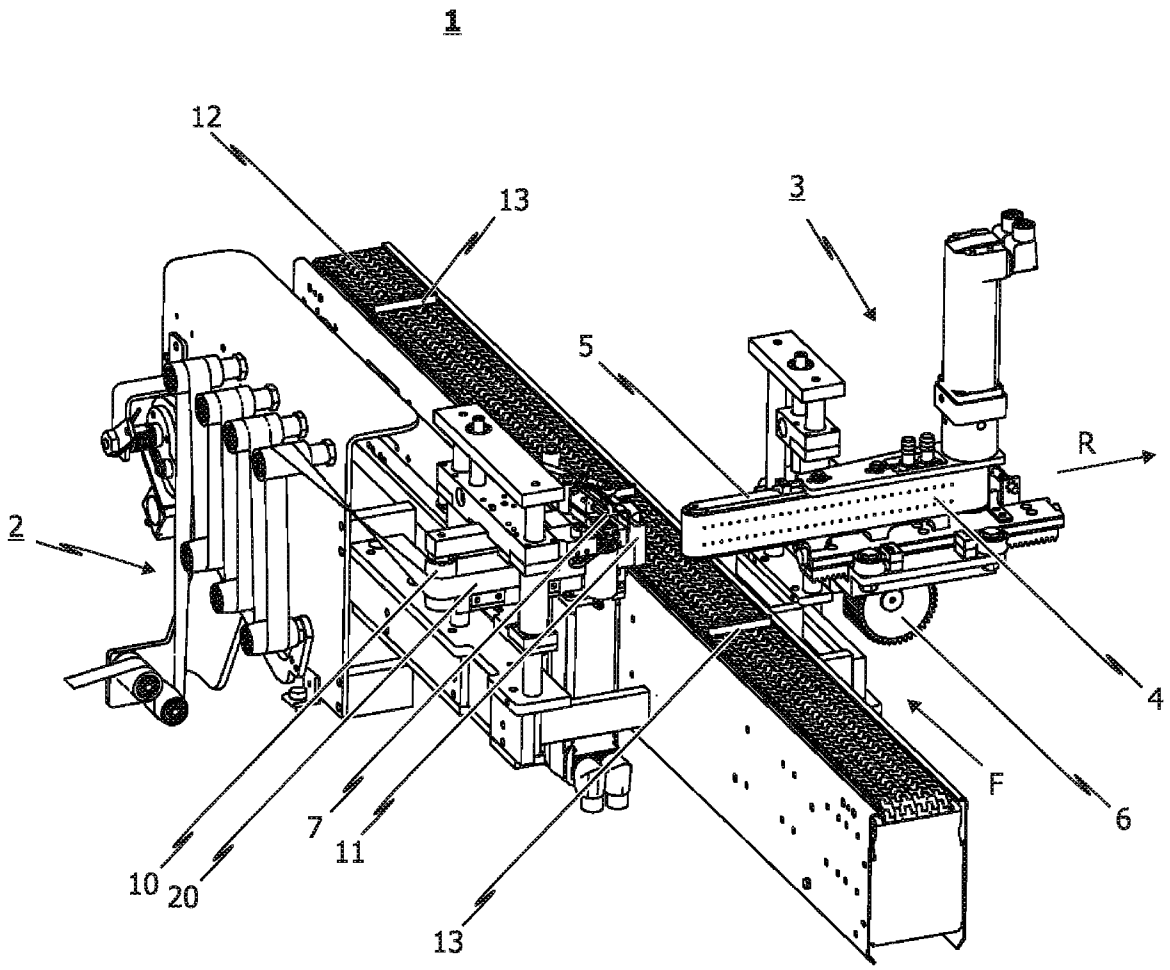

FIG. 1

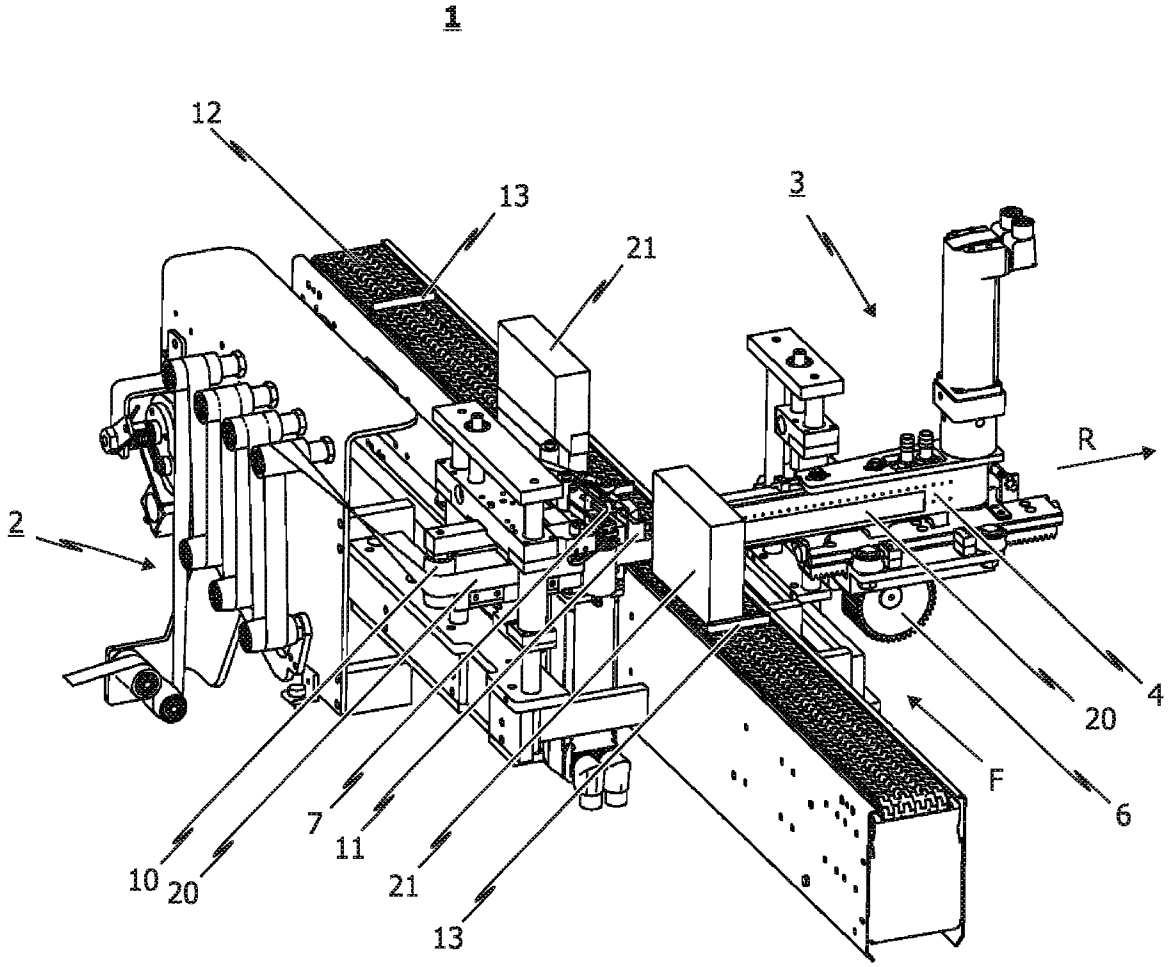

FIG. 2

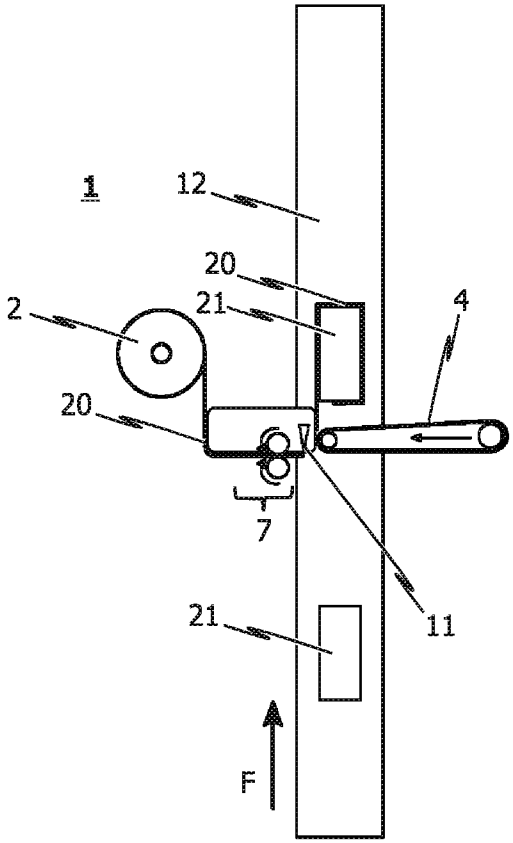

FIG. 3

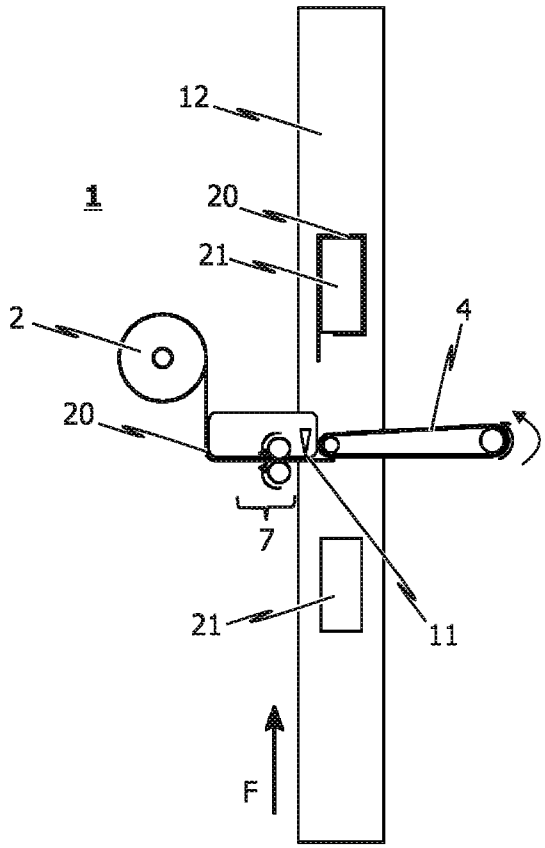

FIG. 4

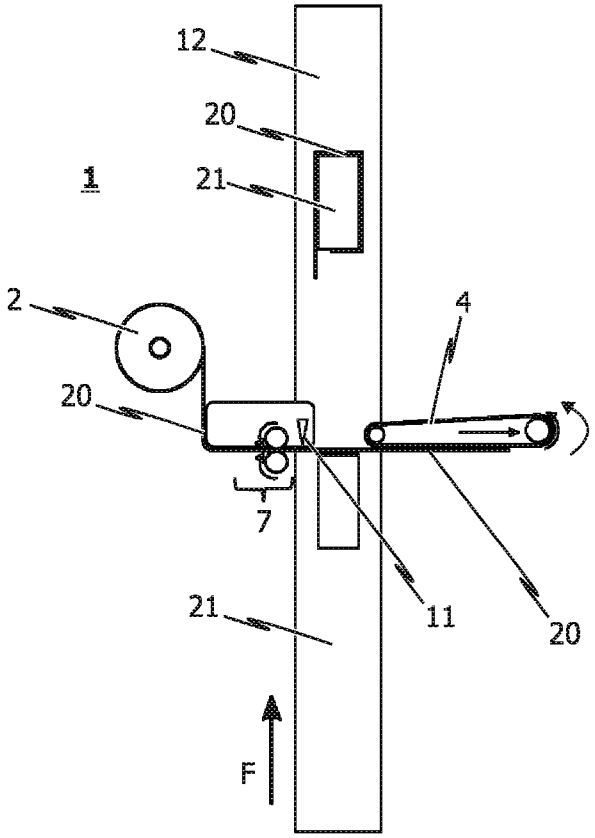

FIG. 5

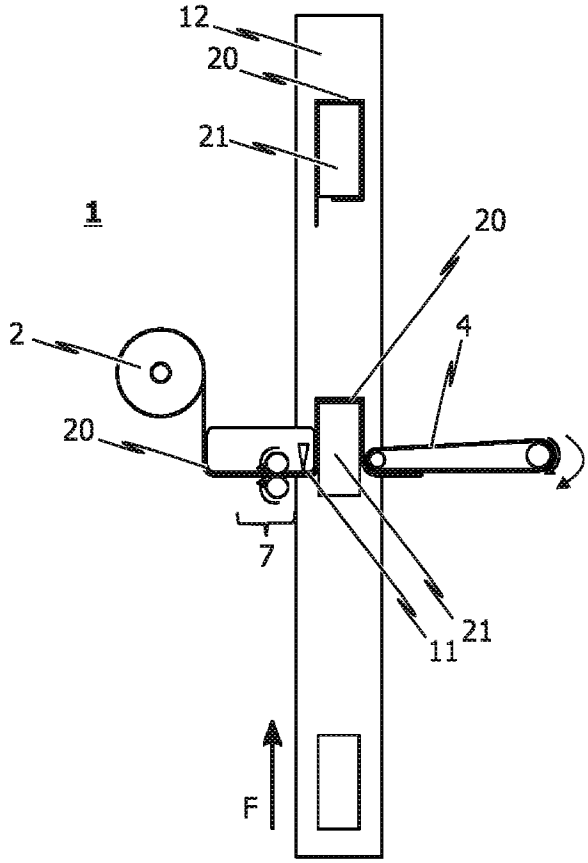

FIG. 6

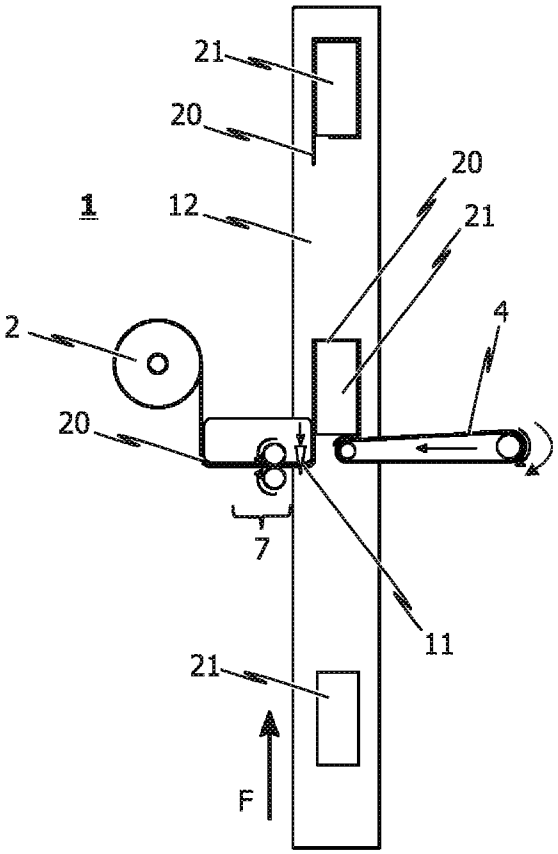

FIG. 7