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- **Bonde, Tommy**
DK-8600 Silkeborg (DK)
- **HANSEN, Per Henrik**
DK-8340 Malling (DK)
- **KJERULF, Søren**
8400 Ebeltoft (DK)
- **Bendixen, Ole**
DK-8464 GALTEN (DK)

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(74) Representative: **Tetra Pak - Patent Attorneys SE**
AB Tetra Pak
Patent Department
Ruben Rausing's gata
221 86 Lund (SE)

(71) Applicant: **Tetra Laval Holdings & Finance S.A.**
1009 Pully (CH)

(72) Inventors:
• **Teinby, Benjamin Nicky**
8260 Viby (DK)

(54) **A MULTI-LANE SYSTEM FOR WRAPPING ICE CREAM PRODUCTS AND A METHOD THEREOF**

(57) A multi-lane system (100) for wrapping ice cream products (202) is presented. The system comprises reel holders (102) for receiving reels (104) holding webs (106) of packaging material, a wrapping machine (110) arranged to receive the ice cream products (202), to receive the webs (106), to enclose the ice cream products (202) in the webs (106) and to seal the webs (106)

such that wrapped ice cream products (204) are formed, and a web conveying arrangement (108) arranged to individually feed the webs (106) of packaging material from the reels (102) to the wrapping machine (110). The web conveying arrangement (108) comprises de-tensioning devices (112) arranged to decrease tensions in the webs (106) upstream the wrapping machine (110).

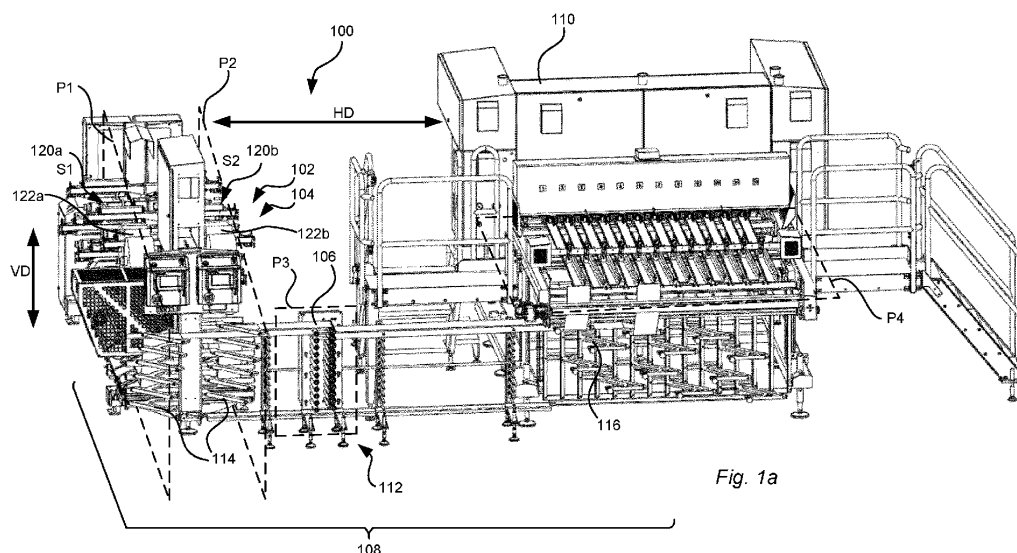


Fig. 1a

Description

Technical Field

[0001] The invention generally relates to ice cream production, and in particular to a multi-lane system for wrapping ice cream products and a method thereof.

Background Art

[0002] In an ice cream production line of today, it is common practice to have a multilane wrapper, such as Tetra Pak® Multilane Wrapper A2 marketed by Tetra Pak. The multi-lane wrapper provides for that sandwiches, bars, cones or other ice cream products can be continuously wrapped.

[0003] The ice cream products can be fed to the multi-lane wrapper from a dip and transfer unit, in which the ice cream products can have been provided with an outer layer of e.g. chocolate, a rotary moulder extractor, in which the ice cream products have been formed, or similar processing unit. In the wrapper, the ice cream products are placed in lanes and from these lanes fed onto webs of packaging material. Once placed on the webs, these are folded and sealed such that longitudinal sealings are obtained. In a next step, transversal sealings, also known as cross sealings, are formed. Thereafter, wrapped ice cream products are formed by cutting the webs in the transversal sealings.

[0004] The multi-lane wrapper comes with a number of advantages. For instance, several lanes in parallel provide for high capacity, but also that different lanes may be handled individually, e.g. by controlling the cutting of the webs individually. A further advantage is that operation of the multi-lane wrapper may be synchronized with other equipment in the production line to ensure a reliable overall operation.

[0005] Even though the multi-lane wrapper of today is a well-established piece of equipment that is used in many ice cream production lines, there is nevertheless room for improvement in terms of reliability, flexibility and user-friendliness.

Summary

[0006] It is an object of the invention to at least partly overcome one or more of the above-identified limitations of the prior art. In particular, it is an object to provide a multi-lane wrapper for ice cream products that is more reliable such that the downtime of the system can be further reduced. Another object may be to provide improved flexibility in terms of set-up such that the multi-lane wrapper or the ice cream production line as a whole can be adapted to meet premises-specific conditions. A further object may be to provide improved working conditions for operators of the multilane wrapper.

[0007] According to a first aspect it is provided a multi-lane system for wrapping ice cream products, said sys-

tem comprising reel holders for receiving reels holding webs of packaging material, a wrapping machine arranged to receive the ice cream products, to receive the webs, to enclose the ice cream products in the webs and to seal the webs such that wrapped ice cream products are formed, and a web conveying arrangement arranged to individually feed the webs of packaging material from the reels to the wrapping machine, wherein the web conveying arrangement comprises de-tensioning devices arranged to decrease tensions in the webs upstream the wrapping machine.

[0008] An advantage of having de-tensioning devices upstream the wrapping machine is that the webs that enter the wrapping machine can have a tension that provides for that forming of wrapped ice cream products in the wrapping machine can be made with less risk of web-rupture, which in turn provides for less down time for the multi-lane system.

[0009] The web conveying arrangement may comprise first sliders placed downstream the reel holders and upstream the de-tensioning devices, wherein the first sliders are angled relative to a first feeding direction FD1 of the webs, such that the webs are turned and redirected from the first feeding direction FD1 to a second feeding direction FD2 when slid over the first sliders.

[0010] Having first sliders provide for that the system may be L-shaped, or U-shaped if additional sliders are provided. This has shown to provide efficient feeding of the web to the wrapping machine as well as to offer more operator-friendly handling of the reels.

[0011] The web conveying arrangement may comprises second sliders placed downstream the de-tensioning devices and upstream the wrapping machine, wherein the second sliders are angled relative to the second feeding direction FD2, such that the webs are turned and redirected from the second feeding direction FD2 to a third feeding direction FD3 when slid over the second sliders.

[0012] The second sliders can in combination with the first sliders provide for that the system is U-shaped. This makes the handling of the reels easier for an operator.

[0013] The first sliders may be elongated and extend in parallel to a first axis A1 that is angled by 30° to 60° relative to the first feeding direction FD1, and the second sliders 116 are elongated and extend in parallel to a second axis A2 that is angled 30° to 60° relative to the second feeding direction FD2.

[0014] The reel holders may be placed at a horizontal distance HD of at least 1 meter from the wrapping machine, and the reel holders may be placed at a vertical distance VD of at least 0.5 meter from a floor level.

[0015] The reel holders may comprise a first group of reel holders arranged for receiving a first set of reels from a first side S1, and a second group of reel holders arranged for receiving a second set of reels from a second side S2, wherein the first set of reels may be arranged to feed out first webs in a first plane P1 and the second set of reels may be arranged to feed out second webs in

a second plane P2, wherein the first and second planes P1, P2 may be parallel vertical planes.

[0016] The de-tensioning devices may be placed in a third plane P3, wherein said third plane P3 is a vertical plane.

[0017] The second sliders may be horizontally displaced, such that the webs can be horizontally displaced when fed to the wrapping machine.

[0018] An advantage of this is that the webs may enter the wrapping machine in the same horizontal plane. This is in turn advantageous in that ice cream products can easily be placed on several webs at the same time.

[0019] Each de-tensioning device of the de-tensioning devices may comprise a roller that is arranged to be rotated by a motor giving the roller a peripheral speed that is higher than a speed by which the web passes the roller.

[0020] The webs of packaging material may comprise polypropylene PP.

[0021] According to a second aspect it is provided a method for wrapping ice cream products. The method comprises providing webs of packaging material from reels placed on reel holders, conveying the webs individually from the reels to a wrapping machine by using a web conveying arrangement, decreasing tensions in the webs by using de-tensioning devices, feeding the webs into the wrapping machine, feeding the ice cream products into the wrapping machine, enclosing the ice cream products in the webs, and sealing and cutting the webs such that wrapped ice cream products are formed.

[0022] In line with the advantages laid forward with respect to the first aspect, an advantage with decreasing tensions in the webs using de-tensioning devices is that the webs that enter the wrapping machine can have a tension that provide for that forming of wrapped ice cream products in the wrapping machine can be made with less risk of web-rupture, which in turn provides for less down time for the multi-lane system.

[0023] The method may further comprise turning and redirecting the webs from a first feeding direction FD1 to a second feeding direction FD2 by sliding the webs over first sliders.

[0024] The method may further comprise turning and redirecting the webs from the second feeding direction FD2 to a third feeding direction FD3 by sliding the webs over second sliders.

[0025] The method may further comprise displacing the webs horizontally while turning and redirecting the webs using the second sliders.

[0026] The step of decreasing the tensions of the webs using the de-tensioning devices may comprise, for each de-tensioning device, rotating a roller by a motor such that a peripheral speed of the roller is higher than a speed by which the web passes the roller.

[0027] The advantages presented with reference to the first aspect are also applicable to the second aspect.

[0028] Still other objectives, features, aspects and advantages of the invention will appear from the following detailed description as well as from the drawings.

Brief Description of the Drawings

[0029] Embodiments of the invention will now be described, by way of example, with reference to the accompanying schematic drawings, in which

Fig. 1a and 1b illustrate a first and a second perspective view of a multi-lane system for wrapping ice cream products.

Fig. 1c illustrates a detailed perspective view of de-tensioning devices of the multi-lane system illustrated in fig. 1a and 1b.

Fig. 1d illustrates a detailed front view of de-tensioning devices of the multi-lane system illustrated in fig. 1a and 1b.

Fig. 2 schematically illustrates a multi-lane system for wrapping ice cream products.

Fig. 3 is a flowchart illustrating a method for wrapping ice cream products.

Detailed description

[0030] Fig. 1a and 1b illustrate a multi-lane system 100 for wrapping ice cream products by way of example. In the multi-lane system 100, reel holders 102 can be provided for receiving reels 104 holding webs 106 of packaging material. By using a web conveying arrangement 108, which may comprise several rollers and motors, the webs 106 can be fed into a wrapping machine 110 in which ice cream products are wrapped in the packaging material.

[0031] As illustrated, the multi-lane system 100 can have a U-shaped form, seen from above, such that the reel holders 102 and reels 104 can be placed at a horizontal distance HD from the wrapping machine 110. The U-shaped form makes the multi-lane system 100 different from other multi-lane wrappers. Unlike the multi-lane system 100 illustrated in fig. 1a, it is namely common practice for other multi-lane wrappers to have the reel holders placed below the wrapping machine 110. As an alternative to have a U-shaped form, the multi-lane system 100 may have an L-shaped form.

[0032] An advantage of having the reel holders 102 placed offset is that more room can be provided to an operator such that the reels 104 can be replaced more conveniently. In addition to providing more space, it is also possible to have the reel holders 102 placed at an ergonomically appropriate height to make sure that good working conditions can be provided for the operator.

[0033] To ensure that the webs 106 are fed into the wrapping machine 110 with tensions that provide for that the webs 106 can be folded and sealed adequately, de-tensioning devices 112 are provided. Since conditions may vary for different webs 106, the de-tensioning devices can be handled individually, thereby assuring that each web is de-tensioned appropriately such that problems that may be caused due to incorrect tension in the wrapping machine 110 can be avoided.

[0034] To achieve the U-shaped form as well as for providing efficient web feeding, the webs 106 can be re-directed twice. These redirections can be achieved by using first sliders 114 placed downstream the reel holders 102 and upstream the de-tensioning devices 112, and by using second sliders 116 placed downstream the de-tensioning devices 112 and upstream the wrapping machine 110.

[0035] The first and second sliders 114, 116 may be elongated elements that may be made in metal, e.g. cylindrically shaped metal elements. Surfaces of the first and second sliders 114, 116 may be treated such that low friction coefficients are provided, thereby providing for that the webs 106 can be slid over these without damaging printed pattern of the webs 106 or unduly upholding the webs.

[0036] In addition to have the reel holders 102 placed at the horizontal distance HD from the wrapping machine 110, the reel holders 102 may be provided at a vertical distance VD from a floor level 118. The vertical distance may be measured from the floor level 118 to a center of the reel holder that is closest to the floor level. An advantage with having the reel holders 102 placed in this way is, for example, that the reel holders 102 can be provided at an appropriate working height for the operator such that ergonomically correct working positions can be offered. As illustrated, the reel holders 102 may be provided at two rows. Another option is to have the reel holders provided in one and the same row. Still an option is to have more than two rows. One reason for having a plurality of rows is that a more compact design can be achieved.

[0037] In addition to have the reel holders 102 provided on one or several rows, the reel holders 102 may be provided on two different sides, herein referred to as a first side S1 and a second side S2. On the first side S1, a first group of reel holders 120a configured to hold a first group of reels 122a can be provided. Similarly, on the second side S2, a second group of reel holders 120b configured to hold a second group of reels 122b can be provided. The first group of reel holders 120a and the first group of reels 122a, that can be placed in one or several rows, can be provided in a first plane P1 and the second group of reel holders 120b and the first group of reels 122b can be placed in a second plane P2. As illustrated, the first and second plane P1, P2 can be vertical planes and, also as illustrated, the first and second plane P1, P2 can be parallel.

[0038] When passing the first sliders 114, first and second webs 124a, 124b, fed from the first and second group of reels 122a, 122b, respectively, can be redirected, turned and brought into one and the same plane, a third plane P3 (see also fig. 2). Put differently, the first and second webs 124a, 124b may be fed from the first or second plane P1, P2 into the third plane P3. As illustrated, the first and second plane P1, P2 may be placed perpendicular to the third plane P3, and the first sliders 114 may be angled 45 degrees relative to the first and second

plane P1, P2.

[0039] An advantage of having the reel holders 102 placed in the first and second plane P1, P2 is that access to the reel holders 102 can be provided via both the first side S1 and the second side S2. One reason for having the first and second web 124a, 124b coinciding in the third plane P3 is that de-tensioning devices 112 may be provided in the same vertical plane. Put differently, as illustrated, the de-tensioning devices 112 may be placed above each other, which provides for that these can be easily inspected and adjusted by the operator.

[0040] As illustrated in fig. 1c and 1d, each of the de-tensioning devices 112 can comprise a roller 126, a passive roller 128 and a motor 130. The roller 126 may be controlled by the motor 130 such that the roller 126 can be given a peripheral speed that is higher than a speed by which the web 106 passes the roller 126. This in combination with the passive roller 128, that is not controlled by the motor 130, provides for that a tension of the web 106 can be reduced, which in turn provides for that the webs 106 can be fed into the wrapping machine 110 and handled with low risk of failure in the wrapping machine 110.

[0041] Each web 106 may be controlled individually such that the tensions may be decreased individually. This may be achieved by have a dedicated motor for each web. Another option is to use the same motor for a plurality of webs, thereby collectively decrease the tensions in a plurality of webs. The plurality of webs may comprise all webs 106 or a sub-set of the webs 106.

[0042] Fig. 2 schematically illustrates a multi-lane system 100, such as the multi-lane system 100 described in connection with fig. 1a and 1b. The multi-lane system 100 of fig. 2 may include the same features as the multi-lane system illustrated in fig. 1a and 1b, and vice versa. The multi-lane system 100 of fig. 2 has reel holders 102 which are provided in the first group of reel holders 120a and the second group of reel holders 120b such that these can be accessed via the first and second side S1, S2. The first group of reels 122a, provided on the first group of reel holders 120a, feed out the first webs 124a in the first plane P1 in a first feeding direction FD1. Similarly, the second group of reels 122b, provided on the second group of reel holders 120b, feed out the second webs 124b in the second plane P2 in the first feeding direction FD1. In the example illustrated, four reels 104 are provided, two on each side, resulting in that the first webs 124a comprise webs in two rows, and also that the second webs 124b comprise webs in two rows.

[0043] As illustrated, to provide for that the first and second webs 124a, 124b coincide into the third plane P3, the first sliders 114 may be horizontally displaced. Further, to provide for that the first and second webs 124a, 124b are redirected, the first sliders 114 may be elongated and extend in parallel to a first axis A1 that is angled 30-60° relative to the first feeding direction FD1. Preferably, the first axis A1 is angled 40-50° relative to the first feeding direction FD1. More preferably, the first

axis A1 is angled 45° relative to the first feeding direction FD1, as illustrated in fig. 2, such that a second feeding direction FD2, that is, a feeding direction downstream the first sliders 114 and upstream the second sliders 116, is perpendicular to the first feeding direction FD1.

[0044] The second sliders 116 may be displaced horizontally to provide for that the first and second webs 124a, 124b provided in the third plane P3, that is, one and the same vertical plane, can be re-arranged such that these are placed in a fourth plane P4, that is, one and the same horizontal plane. This provides for that the webs 106 can be fed into the wrapping machine 110 next to each other, which is advantageous e.g. in that this provides a good overview for the operator.

[0045] The second sliders 116 also provide a redirection of the first and second webs 124a, 124b. The second sliders 116 may be elongated and may extend in parallel to a second axis A2 that is angled 30-60° relative to the second feeding direction FD2. Preferably, the second axis A2 is angled 40-50° relative to the second feeding direction FD2. More preferably, the second axis A2 is angled 45° relative to the second feeding direction FD2, as illustrated in fig. 2, such that a third feeding direction FD3, that is, a feeding direction downstream the second sliders 116 and upstream the wrapping machine 110, is perpendicular to the second feeding direction FD2.

[0046] Before the webs enter the wrapping machine 110, ice cream products 202 may be placed on the webs. Inside the wrapping machine 110, longitudinal sealings and transversal sealings can be formed and the webs may be cut into wrapped ice cream products 204 that are fed out from the wrapping machine 110.

[0047] Fig. 3 is a flowchart illustrating a method 300 for wrapping the ice cream products 202. In a first step 302, the webs 106 of packaging material from the reels 104 placed on the reel holders 102 can be provided. Thereafter, in a second step 304, the webs 106 can be individually conveyed from the reels 104 to the wrapping machine 110 by using the web conveying arrangement 108. Next, in a third step 306, tensions in the webs 106 can be decreased by using the de-tensioning devices 112. In a fourth step 308, the webs 106 can be fed into the wrapping machine 110. In a fifth step 310, the ice cream products 202 can be fed into the wrapping machine 110. Thereafter, in a sixth step 312, the ice cream products 202 can be enclosed in the webs 106. In a seventh step 314, the webs 106 can be sealed and cut such that the wrapped ice cream products 204 can be formed.

[0048] The second step 304 may comprise a first sub-step 316 in which the webs 106 are turned and redirected from the first feeding direction FD1 to the second feeding direction FD2 by sliding the webs 106 over first sliders 114, which may be elongated and extend in parallel to a first axis A1 that is angled by 30° to 60° relative to the first feeding direction FD1, preferably 40° to 50°, more preferably 45°.

[0049] Further, the second step 304 may comprise a second sub-step 318 in which the webs 106 are turned

and redirected from the second feeding direction FD2 to the third feeding direction FD3 by sliding the webs 106 over the second sliders 116, which may be elongated and extend in parallel to a second axis A2 that is angled 30° to 60° relative to the second feeding direction FD2, preferably 40° to 50°, more preferably 45°.

[0050] In addition, the second step 304 may also comprise a third sub-step 320 in which the webs 106 are horizontally displaced during the second sub-step 318 when the webs are turned and redirected using the second sliders 116.

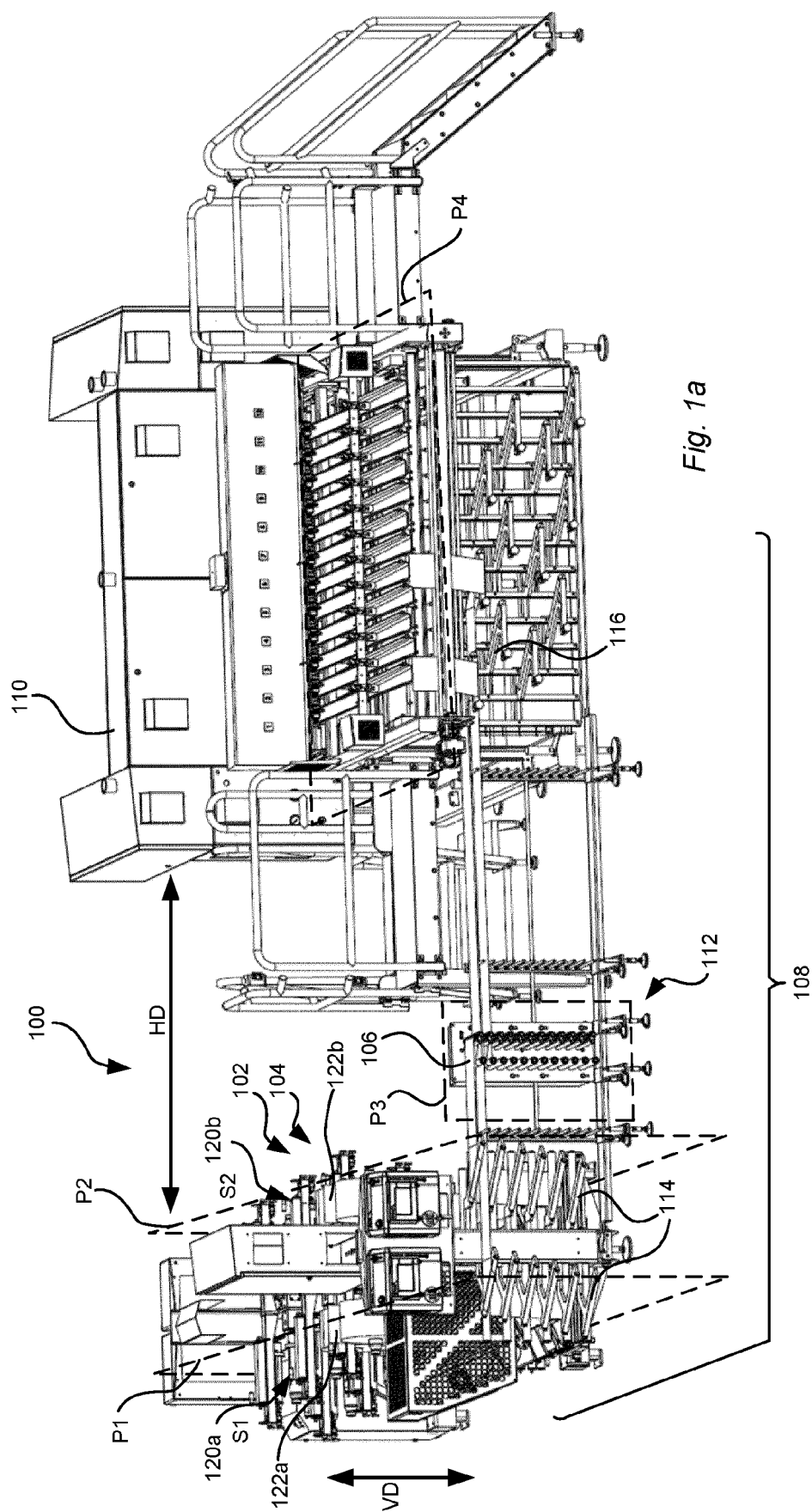
[0051] The third step 306 may comprise a fourth sub-step 322 in which the tensions of the webs 106 are decreased by that the roller 126 is rotated by the motor 130 such that the peripheral speed of the rotor 126 is higher than the speed by which the web passes the roller 126.

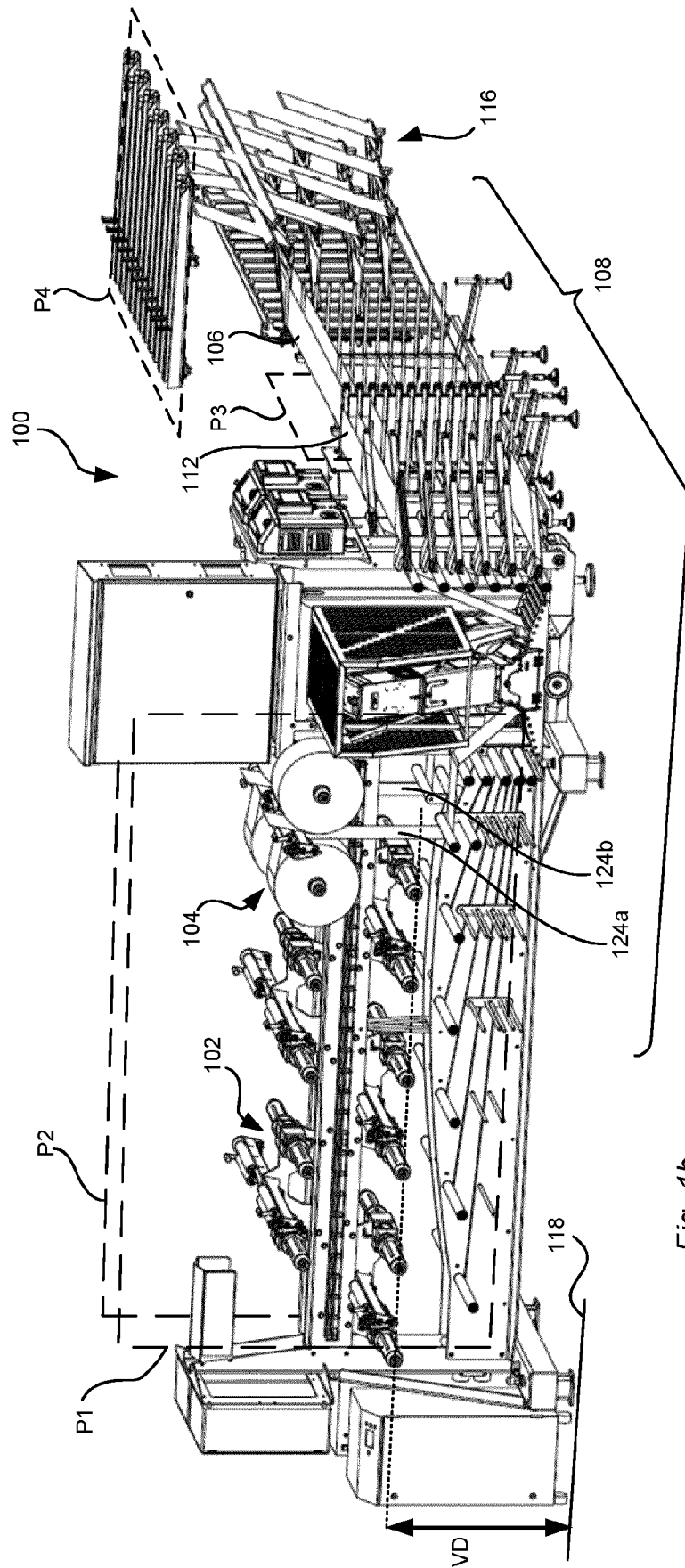
[0052] From the description above follows that, although various embodiments of the invention have been described and shown, the invention is not restricted thereto, but may also be embodied in other ways within the scope of the subject-matter defined in the following claims.

Claims

1. A multi-lane system (100) for wrapping ice cream products (202), said system comprising reel holders (102) for receiving reels (104) holding webs (106) of packaging material, a wrapping machine (110) arranged to receive the ice cream products (202), to receive the webs (106), to enclose the ice cream products (202) in the webs (106) and to seal the webs (106) such that wrapped ice cream products (204) are formed, and a web conveying arrangement (108) arranged to individually feed the webs (106) of packaging material from the reels (102) to the wrapping machine (110), **wherein** the web conveying arrangement (108) comprises de-tensioning devices (112) arranged to decrease tensions in the webs (106) upstream the wrapping machine (110).
2. The system (100) according to claim 1, wherein the web conveying arrangement (108) comprises first sliders (114) placed downstream the reel holders (102) and upstream the de-tensioning devices (112), wherein the first sliders (114) are angled relative to a first feeding direction (FD1) of the webs (106), such that the webs (106) are turned and redirected from the first feeding direction (FD1) to a second feeding direction (FD2) when slid over the first sliders (114).
3. The system (100) according to claim 2, wherein the web conveying arrangement (108) comprises second sliders (116) placed downstream the de-tensioning devices (112) and upstream the wrapping

- machine (110),
wherein the second sliders (116) are angled relative to the second feeding direction (FD2), such that the webs (106) are turned and redirected from the second feeding direction (FD2) to a third feeding direction (FD3) when slid over the second sliders (116).
4. The system (100) according to claim 3, wherein the first sliders (114) are elongated and extend in parallel to a first axis (A1) that is angled by 30° to 60° relative to the first feeding direction (FD1), and the second sliders (116) are elongated and extend in parallel to a second axis (A2) that is angled 30° to 60° relative to the second feeding direction (FD2).
 5. The system (100) according to any one of the preceding claims, wherein the reel holders (102) are placed at a horizontal distance (HD) of at least 1 meter from the wrapping machine (110), and the reel holders (102) are placed at a vertical distance (VD) of at least 0.5 meter from a floor level (118).
 6. The system (100) according to any one of the preceding claims, wherein the reel holders (102) comprise a first group (120a) of reel holders (102) arranged for receiving a first set of reels (122a) from a first side (S1), and a second group (120b) of reel holders (102) arranged for receiving a second set of reels (122b) from a second side (S2), wherein the first set of reels (122a) is arranged to feed out first webs (124a) in a first plane (P1) and the second set of reels (122b) is arranged to feed out second webs (124b) in a second plane (P2), wherein the first and second planes (P1, P2) are parallel vertical planes.
 7. The system (100) according to any one of the preceding claims, wherein the de-tensioning devices (112) are placed in a third plane (P3), wherein said third plane (P3) is a vertical plane.
 8. The system (100) according to any one of the claims 3 to 7, wherein the second sliders (116) are horizontally displaced, such that the webs (106) are horizontally displaced when fed to the wrapping machine (110).
 9. The system (100) according to any one of the preceding claims, wherein each de-tensioning device (112) of the de-tensioning devices comprises a roller (126) that is arranged to be rotated by a motor (130) giving the roller (126) a peripheral speed that is higher than a speed by which the web passes the roller (126).
 10. The system (100) according to any one of the preceding claims, wherein the webs (106) of packaging material comprises polypropylene (PP).
 11. A method (300) for wrapping ice cream products (202), said method comprising providing (302) webs (106) of packaging material from reels (104) placed on reel holders (102), conveying (304) the webs (106) individually from the reels (104) to a wrapping machine (110) by using a web conveying arrangement (108), decreasing (306) tensions in the webs (106) by using de-tensioning devices (112), feeding (308) the webs (106) into the wrapping machine (110), feeding (310) the ice cream products (202) into the wrapping machine (110), enclosing (312) the ice cream products (202) in the webs (106), and sealing and cutting (314) the webs (106) such that wrapped ice cream products (204) are formed.
 12. The method (300) according to claim 11, comprising turning and redirecting (316) the webs (106) from a first feeding direction (FD1) to a second feeding direction (FD2) by sliding the webs (106) over first sliders (114).
 13. The method (300) according to claim 12, comprising turning and redirecting (318) the webs (106) from the second feeding direction (FD2) to a third feeding direction (FD3) by sliding the webs (106) over second sliders (116).
 14. The method (300) according to claim 13, comprising displacing (320) the webs (106) horizontally while turning and redirecting (318) the webs using the second sliders (116).
 15. The method (300) according to any one of the claims 11 to 14, wherein the decreasing (306) the tensions of the webs (106) using a plurality of de-tensioning devices (112) comprises, for each de-tensioning device (112), rotating (322) a roller (126) by a motor (130) such that a peripheral speed of the roller (126) is higher than a speed by which the web passes the roller (126).





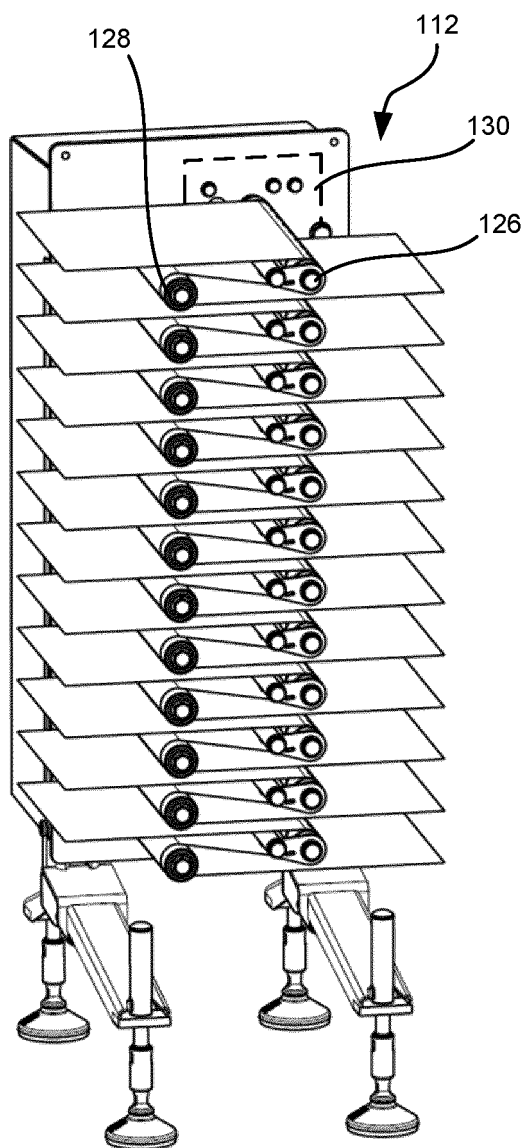


Fig. 1c

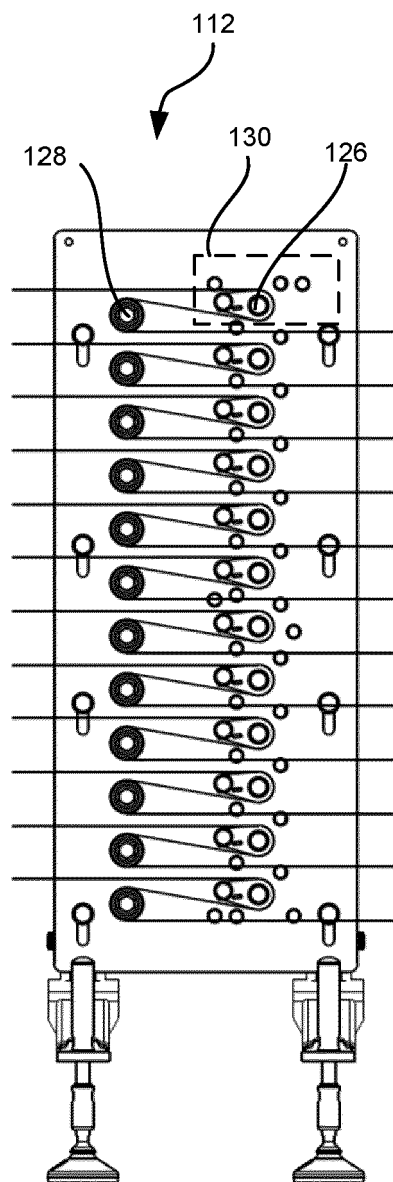


Fig. 1d

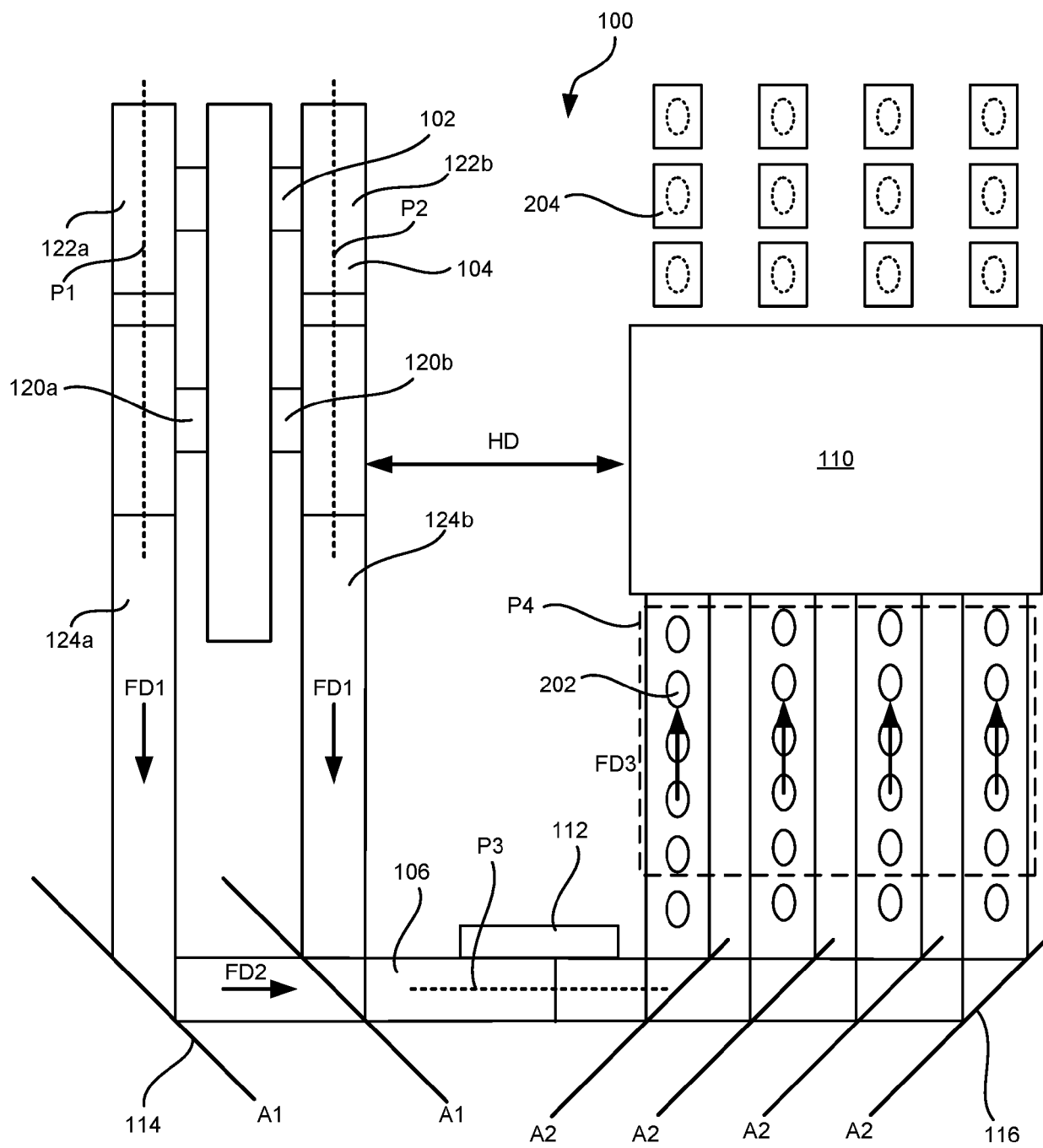


Fig. 2

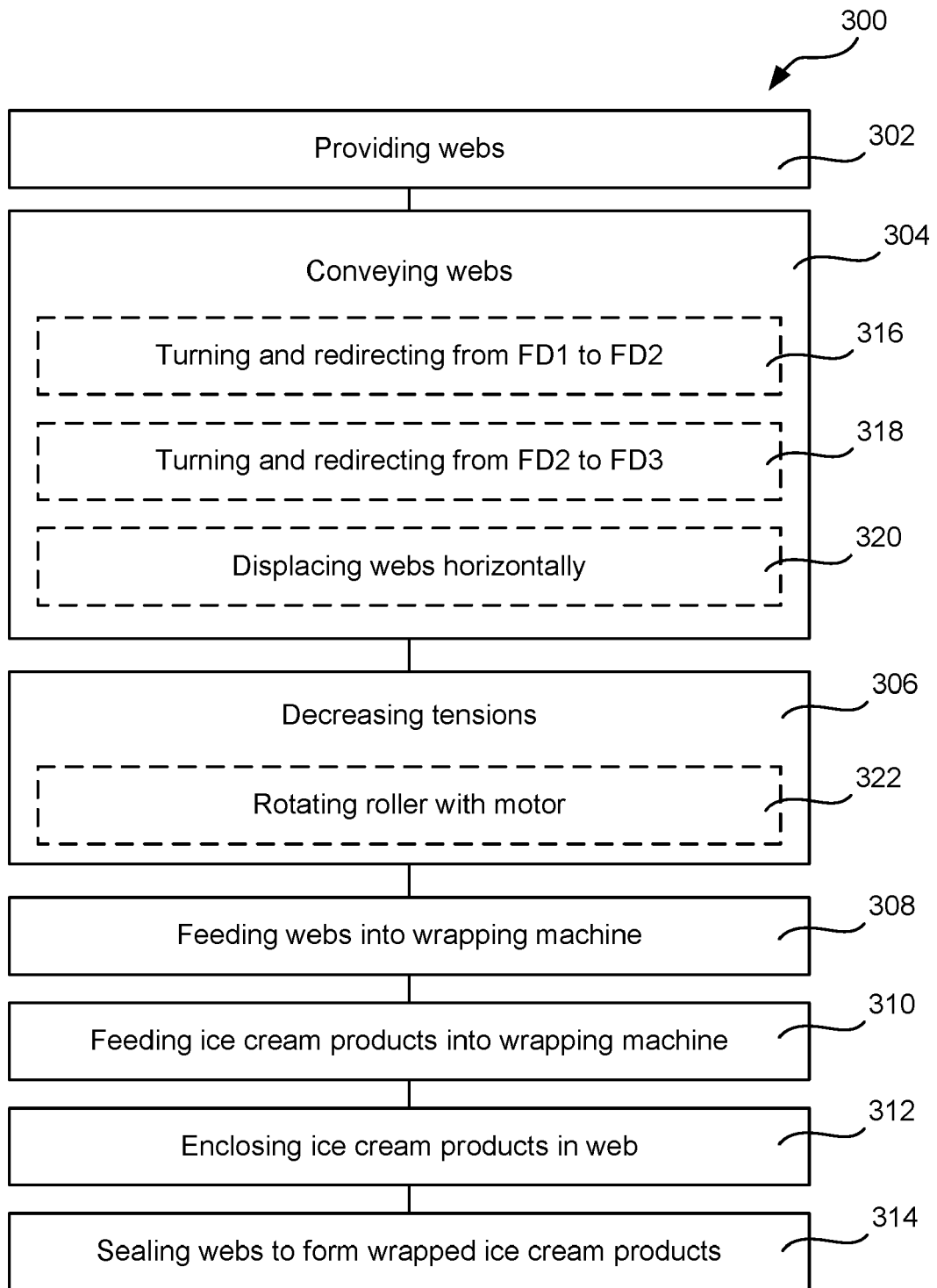


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 21 16 0793

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 3 392 173 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]) 24 October 2018 (2018-10-24) * paragraphs [0007], [0017], [0033], [0038], [0039], [0043] * * figures 1, 2A, 2B *	1,5-11, 15	INV. B65H23/188 B65B9/067 B65B25/00 B65B41/16 B65B57/04 B65H20/34 B65B65/00
A	DE 20 2009 014311 U1 (HUGO BECK MASCHB GMBH & CO KG [DE]) 3 March 2011 (2011-03-03) * paragraphs [0001], [0002], [0021], [0023] * * figures 1, 2 *	2-4, 12-14	
A	US 2013/067858 A1 (SPEARS SCOTT [US] ET AL) 21 March 2013 (2013-03-21) * paragraphs [0002], [0078], [0079] * * figures 2-4 *	9	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65H B65B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 August 2021	Examiner Cescutti, Gabriel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 21 16 0793

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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