

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization

International Bureau

(43) International Publication Date  
13 June 2019 (13.06.2019)



(10) International Publication Number  
**WO 2019/113140 A1**

(51) International Patent Classification:

*B65B 9/00* (2006.01)      *B65B 69/00* (2006.01)

*B65B 9/02* (2006.01)      *B65D 75/00* (2006.01)

*B65B 33/00* (2006.01)      *G07F 11/00* (2006.01)

*B65B 51/00* (2006.01)

(21) International Application Number:

PCT/US2018/063955

(22) International Filing Date:

05 December 2018 (05.12.2018)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/595,192      06 December 2017 (06.12.2017)      US

62/633,745      22 February 2018 (22.02.2018)      US

(72) Inventor; and

(71) Applicant: **ALMBLAD, Robert** [US/US]; 309 Madison Street, Lynchburg, VA 24504 (US).

(74) Agent: **NICKERSON, Michael, J.** et al.; Basch & Nickerson LLP, 1751 Penfield Road, Penfield, NY 14526 (US).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: FOOD DISPENSING MODULE FOR A DELAMINATING FOOD DISPENSING SYSTEM

(57) Abstract: A food dispensing module for a delaminating food dispensing system includes an outer housing; and a delaminating housing. The delaminating housing has a first portion being located within said outer housing and a second portion located outside said outer housing. The delaminating housing includes delaminating nips, a first film take-up roller, a second film take-up roller, an output opening, and a trap void. The output opening is located in the second portion of the delaminating housing.

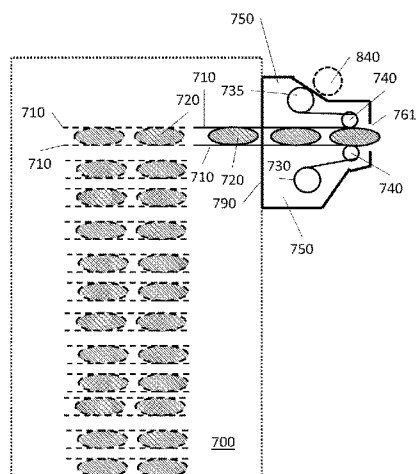


FIGURE 17



WO 2019/113140 A1

**FOOD DISPENSING MODULE FOR A DELAMINATING FOOD DISPENSING SYSTEM****PRIORITY INFORMATION**

**[0001]** The present application claims priority, under 35 U.S.C. §119(e), from US Provisional Patent Application, Serial Number 62/595,192, filed on December 6, 2017. The entire content of US Provisional Patent Application, Serial Number 62/595,192, filed on December 6, 2017, is hereby incorporated by reference.

**[0002]** The present application claims priority, under 35 U.S.C. §119(e), from US Provisional Patent Application, Serial Number 62/633,745, filed on February 22, 2018. The entire content of US Provisional Patent Application, Serial Number 62/633,745, filed on February 22, 2018, is hereby incorporated by reference.

**TECHNICAL FIELD**

**[0003]** The present invention is directed to a food dispensing module for a delaminating food dispensing system includes an outer housing; and a delaminating housing. The delaminating housing has a first portion being located within the outer housing and a second portion located outside the outer housing. The delaminating housing includes delaminating nips, a first film take-up roller, a second film take-up roller, an output opening, and a trap void. The output opening is located in the second portion of the delaminating housing.

**BACKGROUND ART**

**[0004]** Various types of cooking devices are known in the art. Specifically, various types of grills are known. In one type of grill, the food is placed on a grilling surface, grilling the side of the food that contacts the grilling surface. After that side of the food is cooked, the food is manually turned or flipped to cook the opposite side. After the second side of the food is cooked, the food is removed from the grill for further preparation and/or serving.

**[0005]** In another type of grill, two-sided cooking is accomplished simultaneously. Such grills are commonly known as clamshell grills and have upper and lower cooking platens that are horizontally opposed for contacting the two sides of a food item simultaneously to thereby cook both sides simultaneously.

**[0006]** For proper performance, the two grilling surfaces should be parallel to each other so that each surface uniformly contacts and cooks the associated side of the food item that contacts a respective platen cooking surface.

**[0007]** There is a large amount of activity in the general field of restaurant automation in context of hygienic handling of various food product(s), and several studies and researches as well as invention(s) have delved upon the subject(s) of 'packaging' and 'unpackaging' procedures/methods. Protocols such as lamination, sheet-layering, foil packaging and peeling off, dismantling and delamination, at the manufacture sites (food processing

factories/units) and usage sites (restaurants, hotels and eating points ) are known to be in existence in the prior art profile.

**[0008]** The prior art discloses patents on delamination of a laminate, use of conveyor belts to transport laminated food products from one place to other, as well as use of several methods for unpacking the laminated food products such as peeling of film, delamination of laminated food and also in some cases the deployment of stripper unit. However, the prior art profile does not eliminate the need of human interference such as the food product directly passed on to a cooking unit.

**[0009]** US Patent Number 5,141,584 discloses an apparatus and method for delaminating a composite sheet structure of the kind comprising a vertically frangible layer having a first surface adhesively bonded to a first sheet at a substantially uniform strength and an opposite surface abutting areas which are, respectively, adhesively bonded to a second sheet at strengths less or greater than the uniform strength and having a marginal portion or tab extending beyond the first sheet. The composite sheet structure is fed into the nip of upper and lower peel rollers and upon passage therethrough a strip sheet roller is rotated into position to bend and hold the laminate against the upper peel roller in a position to fracture the tab from the first sheet. On reversal of the feed direction and passage of the laminate back through the nip of the strip sheet and upper peel rollers, the thicker "keeper sheet" of the flexed laminate breaks from the "throw-away" sheet containing the tab at the preformed tab. A roller configuration and drive train structure are provided that provides a more predictable and repeatable steady state condition and allows for control of the location of the peel point to be accomplished.

**[0010]** Another conventional system is a method and device for packaging or unpacking portions of a deep frozen food product. The invention provides details about how the process packs portions of -a low temperature foodstuff are first arranged with longitudinal separations in a row behind one another. The portions are guided between two strips of foil packaging which are then combined in order to form a ribbon. The portions may be placed in chambers in one of the strips, which are arranged along it with equal spacings. Each strip may also have half-chambers, and may be guided together in order to align corresponding half-chambers with each other prior to the introduction of a portion into one or both of them.

**[0011]** US Patent Number 6,244,019 discloses a system for packaging and unpacking can lids. The system relates to packages for stacked can lids, a method of producing such packages, devices for implementing said method, devices for automated unpacking of the above nature and a system for packing and unpacking can lids. The packages are formed

with an open end, which is closed in that the bag end, when in unfolded condition, is compressed and is provided with fastening means retaining said closed condition.

**[0012]** In addition, the closing device closes the open package end by compressing the bag end in the unfolding condition and in that fastening means are applied retaining said closed condition, and the unpacking device causes relative movement of the packages and the can lids contained therein in such a manner that the can lids are pressed against the package end closed by means of said fastening means.

**[0013]** The features of the afore-mentioned prior art disclose complex design and bulky structural indices thereby hindering utilization in restaurant automation devices. Moreover, none addresses the use of restaurant automation in highly aseptic conditions by eliminating human interference during transfer of food products from refrigerated storage to cooking unit.

**[0014]** Therefore, it is desirable to provide a system that enables the automation of a meat cooking apparatus which minimizes human interaction and provides an efficient and consistent cooking process.

#### **BRIEF DESCRIPTION OF THE DRAWING**

**[0015]** The drawings are only for purposes of illustrating various embodiments and are not to be construed as limiting, wherein:

**[0016]** Figure 1 is a side view of a clamshell grill;

**[0017]** Figure 2 is a side view of the grill of Figure 1 illustrating movement of the upper platen between a fully open position and the cooking orientation;

**[0018]** Figure 3 is a front view of the food handling system with the food dispensing assembly stored within the food storage assembly;

**[0019]** Figure 4 is a front view of the food handling system with the food dispensing assembly deployed in the dispensing configuration;

**[0020]** Figure 5 is a perspective view of a food product hygienically encased within a continuous laminated food strip;

**[0021]** Figure 6 is a partial exploded view of the upper portion of the food product storage enclosure or carton showing the food dispensing assembly;

**[0022]** Figure 7 is a partial detailed schematic front view of the food dispensing assembly deployed in the dispensing configuration;

**[0023]** Figure 8 is a partial perspective view of the food dispensing assembly deployed in the dispensing configuration;

**[0024]** Figures 9 through 11 schematically depict different dispositions of the film strip take-up devices relative to the food strip directional control;

[0025] Figure 12 illustrates an automated grill system diverting a cooked product to a first receiving area;

[0026] Figure 13 illustrates an automated grill system diverting a cooked product to a second receiving area;

[0027] Figure 14 illustrates an automated grill system receiving uncooked product from a food product delaminator;

[0028] Figure 15 illustrates an automated grill system cooking the uncooked product of Figure 14;

[0029] Figure 16 illustrates an automated grill system diverting the cooked product of Figure 15 to the first receiving area;

[0030] Figure 17 illustrates a food dispensing module for a delaminating food dispensing system;

[0031] Figure 18 illustrates another view of the food dispensing module for a delaminating food dispensing system of Figure 17;

[0032] Figure 19 illustrates a bottom dispensing food dispensing module for a delaminating food dispensing system;

[0033] Figure 20 illustrates a top dispensing food dispensing module for a delaminating food dispensing system;

[0034] Figure 21 illustrates dual dispensing food dispensing modules for a delaminating food dispensing system;

[0035] Figure 22 illustrates a food dispensing module within a delaminating food dispensing system; and

[0036] Figure 23 illustrates another food dispensing module within a delaminating food dispensing system.

#### **DETAILED DESCRIPTION OF THE DRAWINGS**

[0037] For a general understanding, reference is made to the drawings. In the drawings, like references have been used throughout to designate identical or equivalent elements. It is also noted that the drawings may not have been drawn to scale and that certain regions may have been purposely drawn disproportionately so that the features and concepts could be properly illustrated.

[0038] Figure 1 illustrates an example of a system of cooking food with a dual-surface grill. The grill is of the type that has upper and lower cooking platens. The system automatically determines prior to the start of a cooking cycle whether an upper cooking platen and a lower cooking platen are substantially parallel to each other when in a cooking position. If the upper platen and the lower platen are substantially parallel to each other, the food is contacted with the upper and lower platens to cook the food. If the upper and lower

platens are not substantially parallel to each other, at least one of the upper and lower platens is adjusted so that the upper and lower platens are at least substantially parallel to each other when in a cooking position.

**[0039]** After the adjustment, if necessary, the food is contacted with the upper and lower platens to thereby cook the food.

**[0040]** As illustrated in Figure 1, a clamshell grill **10** provides the cooking function. The clamshell grill **10** includes a support structure **12** to which a lower cooking platen **14** is horizontally mounted. Lower platen **14** has a generally smooth, flat cooking surface **18** on its upper side. Lower platen **14** is heated to cooking temperature by one or more heating units **20**, which may be gas or electric.

**[0041]** An upper platen assembly **22** is movably mounted to the rear of support structure **12** by means of an upper platen positioning mechanism **24**. Upper platen assembly **22** comprises an upper cooking platen **28** heated to cooking temperature by heating elements mounted within a casing. Upper cooking platen **28** may be of an equivalent size to lower cooking platen **14**. The upper platen **28** has a flat cooking surface **26** and may be independently heated.

**[0042]** It is noted that by mounting independent upper platen assemblies over a single lower platen, independent cooking zones between upper platen cooking surfaces and lower platen cooking surface may be created to allow greater flexibility for the cook/operator. For example, one upper platen assembly may be used to cook one food product, while other food products can be simultaneously cooked with respect to adjacent upper platen assemblies.

**[0043]** In another example, one batch of food product, for example hamburger patties, may be in the middle of a cooking cycle with respect to a first upper platen assembly. If additional food product needs to be cooked, the cooking of additional food product may be initiated at the other upper platen assemblies, while the patties continue to cook at the first upper platen assembly.

**[0044]** As illustrated in Figure 2, positioning mechanism **24** may be used to facilitate two distinct motions by upper platen assembly **22** from its uppermost position to a cooking position. One motion is a rotational motion to rotate upper platen assembly **22** from an upward open position to a downward horizontal cooking position parallel to lower platen **14**. The other motion is a linear vertical motion to space a horizontally oriented upper platen assembly **22** relative to the lower platen **14**.

**[0045]** To provide the vertical movement to change the height of upper platen assembly **22** relative to cooking surface **18**, a linear actuator **32** is linked to two vertical reciprocating shafts **34** by an actuator cross bar linkage. Actuator cross bar linkage is clamped to vertical

reciprocating shafts **34**, which run through linear motion bearings. The rotational movement of upper platen assembly **22** may be manually accomplished by means of a handle **42**.

**[0046]** A linear actuator assembly comprises a drive motor **44**, linear actuator **32**, two substantially vertical reciprocating shafts **34**, and position sensor switches. Linear actuator **32**, when activated, moves upper platen assembly **22** and upper platen **28** vertically. The rotation providing mechanism rotates upper platen assembly **22** upwards from a horizontal orientation to an open position, as shown in Figure 2, as linear actuator **32** completes its upward stroke. Likewise, as linear actuator **32** begins its downward stroke, the rotation providing mechanism rotates the upper platen assembly **22** back to a horizontal, or closed, orientation.

**[0047]** Grill **10** includes a user interface **52**. Interface **52** includes an activation button to start a cooking cycle when it is depressed to start a cooking cycle. At that time, user interface **52** sends information to a microprocessor **62** that is in data communication with a motor position controller **54**. This information is used by motor position controller **54** to activate linear drive motor **44**.

**[0048]** In a typical cooking cycle, the grill apparatus begins in an inactive state, with its upper platen assembly in its fully opened and raised position. The upper platen assembly is at an angle from horizontal. The operator will select the relevant product setting, from the menu on a control panel, and then will load the food product, a single layer thick, across the surface area of lower platen. When loading is complete, the operator will depress an activation button to initiate the cook cycle.

**[0049]** An example of a dual sided cooking grill is disclosed in US Patent Number 8,359,970. The entire content of US Patent Number 8,359,970 is hereby incorporated by reference.

**[0050]** Another example of a dual sided cooking grill is disclosed in US Patent Number 9,301,646. The entire content of US Patent Number 9,301,646 is hereby incorporated by reference.

**[0051]** To fully automate a grill cooking system, a system of automatically providing a food product to the grill system and a system of automatically removing the cooked product from the grill system and moving it to a preparation or staging area would be desired.

**[0052]** To facilitate automatically providing a food product to the grill system, Figures 3 through 11 provide illustrations of a food dispensing assembly.

**[0053]** As illustrated in Figures 3 and 4, a food handling system **10** stores and dispenses food products including a food storage assembly **12** to store the food products therein and a food dispensing assembly **14** to dispense the food products from the food dispensing assembly **14** of the food handling system **10**.

**[0054]** As illustrated in Figure 5, food products **16**, such as hamburger patties, are packaged between a first elongated strip of flexible material or film **18** and a second elongated strip of flexible material or film **20**. The first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** may be sealed together by heat and/or pressure to cooperatively form a continuous laminated food strip **22** to protect the food products **16** there between for storage within the food storage assembly **12** until the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** are separated by the food dispensing assembly **14** to dispense the food products **16** from the food handling system **10** as described more fully hereinafter.

**[0055]** As illustrated in Figures 3 and 4, the food products **16** are fan folded as a series of food products **16** stacked one upon another in a dispensing configuration or disposition when stored within the food storage assembly **12**. As will be evident, the food products **16** are stored and dispensed onto a dish, conveyor, or other surface (not shown) in a hygienic manner without handling or touching by a human operator.

**[0056]** As illustrated in Figures 3 and 4, the food storage assembly **12** includes a hollow food product storage enclosure or carton **24** to house and support the plurality of food products **16** sealed or disposed between the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** of the continuous laminated food strip **22** stacked in the fan folded configuration.

**[0057]** As illustrated in Figure 6, a food dispensing assembly storage support **26** is disposed in the upper portion of the hollow food product storage enclosure or carton **24** of the food storage assembly **12** to support the food dispensing assembly **14** before use.

**[0058]** As illustrated in Figures 3 and 4, a food dispensing assembly support **28** is disposed on the lower portion thereof to operatively support the food dispensing assembly **14** when deployed to separate the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** to dispense the food products **16** serially and individually from the food dispensing assembly **14** of the food handling system **10**, As illustrated in Figures 4 and 7.

**[0059]** As illustrated in Figure 6, the food dispensing assembly storage support **26** comprises a first food dispensing assembly support member **30** and a second food dispensing assembly support member **32** extending between the upper portion of opposite side walls each indicated as **34** of the hollow food product storage enclosure or carton **24**. The first food dispensing assembly support member **30** and the second food dispensing assembly support member **32** each includes a groove or channel **36** to receive and support a portion of the food dispensing assembly **14** as described more fully hereinafter.



**[0060]** As illustrated in Figures 3, 4, and 7, the food dispensing assembly support **28** includes a food dispensing assembly support housing **38** having a pair of rotatably mounting members or pins each indicated as **40** mounted to a substantially vertically disposed support wall or member **42** and a pair of film separation slots or openings each indicated as **44** and a centrally dispensed laminated strip opening **46** formed through a substantially horizontally disposed lower wall **48** extending outwardly from the substantially vertically disposed support member **42** to receive the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20**, and the continuous laminated food strip **22** respectively when the food dispensing assembly **14** is operatively mounted on the food dispensing assembly support **28** as described more fully hereinafter.

**[0061]** As illustrated in Figures 7 and 8, the food dispensing assembly **14** includes a first film strip reel or film take-up device **50** including a centrally disposed pin mounting channel **52** coupled to the leading end portion of the first elongated strip of flexible material or film **18** and a second film strip reel or film take-up device **54** including a centrally disposed pin mounting channel **56** coupled to the leading end portion of the second elongated strip of flexible material or film **20** such that when the first film strip reel or film take-up device **50** and the second film strip reel or film take-up device **54** are mounted on the corresponding rotatable mounting member or pin **40** extending through centrally disposed pin mounting channels **52** and **56**, respectively.

**[0062]** The food dispensing assembly **14** further includes a food strip directional control **58** mounted to the substantially horizontally disposed lower wall **48** of the food dispensing assembly support **38** to change the direction of travel of the continuous laminated food strip **22** directed to the food dispensing assembly **14** by a laminated food strip guide comprising an upper arcuate guide member **60** and a substantially vertical guide member **62** disposed within the food storage assembly **12**.

**[0063]** The food strip directional control **58** comprises a pair of directional control members each indicated as **62** disposed in spaced relationship to cooperatively form a film slot or channel **63** to receive the continuous laminated food strip **22** and the food products **16** therethrough each directional control member **62** includes a directional control surface **64** to engage the outer surfaces of the first elongated strip of flexible material or film **18** and second elongated strip of flexible material or film **20** when the first film strip reel or film take-up device **50** and the second film strip reel or film take-up device **54** are mounted on the corresponding rotatable mounting member or pin **40**.

**[0064]** When so configured, As illustrated in Figure 8, a drive means **D**, including a motor and belt or suitable mechanism, rotates the rotatable mounting members or pins **40** rotating the corresponding first film strip reel or film take-up device **50** and the second film

strip reel or film take-up device **54** thereby separating the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** allowing the food products **16** to drop or fall onto a conveyor, dish, or other surface (not shown).

**[0065]** The preferred angle for redirecting the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** is at least 170 degrees. However, it is contemplated that at least either the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** is redirected at least about 90 degrees.

**[0066]** Figures 9 through 11 illustrate different examples of redirecting the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20**.

**[0067]** Figure 9 illustrates both films being redirected to form a redirect angle greater than 90 degrees but less than 360 degrees.

**[0068]** Figure 10 illustrates only one film being redirected to form a redirect angle of approximately 90 degrees.

**[0069]** Figure 11 illustrates both films being redirected to form a redirect angle of approximately 90 degrees.

**[0070]** As illustrated in Figures 4 and 7, the food strip directional control **58** of the food dispensing assembly **14** are formed on the lower portions of side walls **70** that are partially disposed in the centrally disposed laminated strip opening **46** with an assembly support member **68** attached or formed on opposite side walls **70** to engage the upper surface **71** of the substantially horizontally disposed lower wall **48** of the food dispensing assembly support housing **38** on opposite sides of the centrally disposed laminated strip opening **46**. Each assembly support member **68** may be disposed between a corresponding pair of retention members each indicated as **67** to cooperatively form an assembly support member receiving channel **69**.

**[0071]** Outer end portions of the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** are attached or coupled to the first film strip reel or film take-up device **50** and the second film strip reel or film take-up device **54** respectively by an adhesive or through a film slot **72** described hereinafter when deployed.

**[0072]** The first film strip reel or film take-up device **50** and the second film strip reel or film take-up device **54** each comprises a spool **74** including a film strip cross-member **76** to receive the first elongated strip of flexible material or film **18** or the second elongated strip of flexible material or film **20** of the continuous laminated food strip **22** having a film retainer element or member **78** disposed on opposite end portions thereof to retain the first

elongated strip of flexible material or film **18** or the second elongated strip of flexible material or film **20** of the continuous laminated food strip **22** thereon during the separation process.

**[0073]** Each film strip cross-member **76** may include the film slot **72** to receive the outer portion of the corresponding first elongated strip of flexible material or film **18** or second elongated strip of flexible material or film **20**.

**[0074]** When the food handling system **10** is stored or refrigerated, each film strip cross-member **76** is disposed within the corresponding groove or channel **36** of the corresponding food dispensing assembly support member **32**.

**[0075]** The continuous laminated food strip **22**, disposed in the food storage assembly **12**, is placed in the cold storage.

**[0076]** As previously described, the food dispensing assembly **14** may be at least partially stored with the food storage assembly **12**, the food dispensing assembly **14** is disposed at the lower portion of the hollow food product storage enclosure or carton **24**. The outer-end portions of the laminated food strips **18** and **20** are connected or coupled to the film take-up devices **50** and **54**.

**[0077]** When the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** of the continuous laminated food strip **22** is reversed backwards at an angle over the first directional control surface **64** and second directional control surface **66** respectively the first elongated strip of flexible material or film **18** and the second elongated strip of flexible material or film **20** of the continuous laminated food strip **22** are separated allowing the food products **16** to separate from the film of the continuous laminated food strip **22**.

**[0078]** This results in unpackaging of the food products **16** from the laminated food strip **22**. As this delamination takes place, the delamination food product **16** passes onto the conveyor belt or other receiving surface (not shown).

**[0079]** Thus, delaminated/ unpackaged food products **16** under aseptic conditions may be fed to a grill or conveyor oven or any other heat source directly for the purpose of cooking, without the food being even touched by the cooking staff.

**[0080]** An automated grill system, as illustrated in Figure 12, includes a food product dispensing system **100** for dispensing uncooked food product; a dual-sided grill system **200** for cooking the uncooked food product; a staging system **400** for receiving cooked food product; and a non-continuous indexed conveyor belt **300** for conveying the uncooked food product from the food product dispensing system **100** to the dual-sided grill system **200** and for conveying the cooked food product from the dual-sided grill system **200** to the staging system **400**. The dual-sided grill system is a clam shell grill system including a lower cooking platen **240** and an upper cooking platen **250**.

**[0081]** The dual-sided grill system may include independently temperature controlled cooking areas.

**[0082]** As illustrated in Figure 12, non-continuous indexed conveyor belt **300** transverses between the lower cooking platen **240** and the upper cooking platen **250**. The upper platen **250** of the dual-sided grill system is in an open position when not cooking food product such that the upper platen **250** does not engage food product and does not engage the non-continuous indexed conveyor belt **300**.

**[0083]** The staging system **400** has multiple staging areas (**410** and **420**), each staging area (**410** and **420**) receives cooked food product. It is noted that the staging areas can receive diverse or different cooked food product.

**[0084]** The non-continuous indexed conveyor belt **300** moves in a first direction **600**, as illustrated in Figure 15, when the non-continuous indexed conveyor belt **300** conveys the uncooked food product **500** from the food product dispensing system **100** to the dual-sided grill system **200** and conveys, as illustrated in Figure 16, the cooked food product **500** from the dual-sided grill system **200** to the staging system **400**. The non-continuous indexed conveyor belt **300** moves in a second direction **610** (as illustrated in Figure 13) when the non-continuous indexed conveyor belt is being reset. The first direction **600** and the second direction **610** are different directions.

**[0085]** The non-continuous indexed conveyor belt **300** includes a first driver **320** for moving the non-continuous indexed conveyor belt **300** in the first direction **600** and a second driver **310** for moving the non-continuous indexed conveyor belt **300** in a second direction **610**.

**[0086]** The automated grill system includes a controller **500** for controlling the movement of the non-continuous indexed conveyor belt **300**. The controller **500** causes the non-continuous indexed conveyor belt **300** to move a first distance when the food product dispensing system **100** dispenses uncooked food product onto the non-continuous indexed conveyor belt **300**.

**[0087]** The controller **500** controls the non-continuous indexed conveyor belt **300** to move a second distance when the non-continuous indexed conveyor belt **300** conveys the uncooked food product from the food product dispensing system to the dual-sided grill system.

**[0088]** The controller **500** controls the non-continuous indexed conveyor belt **300** to move a third distance when the non-continuous indexed conveyor belt **300** conveys the cooked food product from the dual-sided grill system **200** to the staging system **400**.

**[0089]** The controller **500** controls non-continuous indexed conveyor belt **300** to move a fourth distance when the non-continuous indexed conveyor belt **300** is being reset.

**[0090]** The non-continuous indexed conveyor belt **300** may include cooking areas and non-cooking areas.

**[0091]** The automated grill system may include a non-continuous indexed conveyor belt cleaning system (not shown) for cleaning residual food product and cooking by-product from the non-continuous indexed conveyor belt.

**[0092]** Alternatively, the conveyer belt may be a continuous indexed conveyor belt for conveying the uncooked food product from the food product dispensing system to the dual-sided grill system and for conveying the cooked food product from the dual-sided grill system to the staging system.

**[0093]** As illustrated in Figure 12, the automated grill system includes a receiving area **260**, located between the food product dispensing system **100** and the dual-sided grill system **200**, for receiving the dispensed uncooked food product. The conveyor belt **300** conveys the uncooked food product from the receiving area **260** to the dual-sided grill system **200**.

**[0094]** The receiving area **260** allows the uncooked food product to be properly staged prior to cooking without having the uncooked food product from being dispensed directly from the food product dispensing system **100** onto the dual-sided grill system **200**.

**[0095]** As illustrated in Figure 12, the automated grill system includes a diverting system **330** for moving an output edge **315** of the conveyor belt **300** between a first position, as illustrated in Figure 12, and a second position, as illustrated in Figure 13. The first position, as illustrated in Figure 12, corresponds to the first staging area **420** to allow the first staging area **420** to receive cooked food product. The second position, as illustrated in Figure 13, corresponds to the second staging area **410** to allow the second staging area **410** to receive cooked food product.

**[0096]** Figure 14 illustrates the dispensing of uncooked food product **500** from the food product dispensing system **100** onto the receiving area **260**.

**[0097]** Figure 15 illustrates the conveying of the uncooked food product **500** from the receiving area **260** to the dual-sided grill system **200**.

**[0098]** Figure 16 illustrates the conveying of cooked food product **510** from the dual-sided grill system **200** to the first staging area **420** of the staging system **400**.

**[0099]** It is noted that although the above embodiments discuss a lever or flapper diverter mechanism that moves the output edge of the conveyor belt to enable the depositing the cooked food at different staging, the diverting mechanism may comprise a mechanism that moves the entire conveyor belt bi-directionality, in a horizontal direction, so that the output edge of the conveyor belt is positioned over the appropriate staging area. In this

embodiment, the conveyor belt is part of a single unit that can move bi-directionally, in a horizontal direction, between the receiving area and the staging areas.

**[0100]** It is further noted that although the above embodiments discuss a lever or flapper diverter mechanism that moves the output edge of the conveyor belt to enable the depositing the cooked food at different staging, the diverting mechanism may comprise a mechanism that moves the first driver bi-directionally, in a horizontal direction, so that the output edge of the conveyor belt is positioned over the appropriate staging area. In this embodiment, the first driver moves bi-directionally, in a horizontal direction, so that the output edge of the conveyor belt is positioned over the appropriate staging area.

**[0101]** It is additionally noted that although the above embodiments discuss a lever or flapper diverter mechanism that moves the output edge of the conveyor belt to enable the depositing the cooked food at different staging, the diverting mechanism may comprise a mechanism that comprises 2 or more belts, which can be moved bi-directionally, in a horizontal direction, so that the output edge of the conveyor belt is positioned over the appropriate staging area. In this embodiment, the conveyor belts are part of a single unit that can move bi-directionally, in a horizontal direction, between the receiving area and the staging areas.

**[0102]** An automated grill system includes a food product dispensing system for dispensing uncooked food product; a dual-sided grill system for cooking the uncooked food product; a staging system for receiving cooked food product; and a non-continuous indexed conveyor belt for conveying the uncooked food product from the food product dispensing system to the dual-sided grill system and for conveying the cooked food product from the dual-sided grill system to the staging system.

**[0103]** An automated grill system includes a food product dispensing system for dispensing uncooked food product; a dual-sided grill system for cooking the uncooked food product; a staging system for receiving cooked food product; and a continuous indexed conveyor belt for conveying the uncooked food product from the food product dispensing system to the dual-sided grill system and for conveying the cooked food product from the dual-sided grill system to the staging system.

**[0104]** An automated grill system includes a food product dispensing system for dispensing uncooked food product; a dual-sided grill system for cooking the uncooked food product; a receiving area, located between the food product dispensing system and the dual-sided grill system, for receiving the dispensed uncooked food product; a staging system for receiving cooked food product; and a conveyor belt for conveying the uncooked food product from the receiving area to the dual-sided grill system and for conveying the cooked food product from the dual-sided grill system to the staging system.

**[0105]** An automated grill system includes a food product dispensing system for dispensing uncooked food product; a dual-sided grill system for cooking the uncooked food product; a staging system for receiving cooked food product; the staging system having a first staging area and a second staging area, the first staging area and the second staging area staging area receiving cooked food product; a conveyor belt for conveying the uncooked food product from the food product dispensing system to the dual-sided grill system and for conveying the cooked food product from the dual-sided grill system to the staging system; and a diverting system for moving an output edge of the conveyor belt between a first position and a second position, the first position corresponding to the first staging area to allow the first staging area to receive cooked food product, the second position corresponding to the second staging area to allow the second staging area to receive cooked food product.

**[0106]** Figure 17 illustrates a food dispensing module **700** for a delaminating food dispensing system, as described above. As illustrated in Figure 17, the food dispensing module **700** houses food product **720**, the food product **720** having been pre-laminated by two films **710**. The food dispensing module **700** also includes a delaminating housing **790**.

**[0107]** As the food product **720** is dispensed from the food dispensing module **700**, the food product **720** is delaminated, within the delaminating housing **790**, from the two films **710** by delaminating nips **740**. The delaminated food product **725** exits the food dispensing module **700**.

**[0108]** The delaminating process is driven by a first film take-up roller **735**, located within the delaminating housing **790**, and a second take-up roller **730**, located within the delaminating housing **790**. Each take-up roller includes a drive gear (not shown), which mechanically rotates the take-up rollers.

**[0109]** Each take-up roller, upon rotation, rolls one of the films upon itself, driving the laminated food product **720** from its storage location to a location **761** for being dispensed from the food dispensing module **700**.

**[0110]** As illustrated in Figure 17, the first film take-up roller **735** is operatively engaged to a drive mechanism **840** so that the drive mechanism **840** can control the rotation of the first film take-up roller **735** via its associated drive gear. In the embodiment of Figure 17, the drive gear of the first film take-up roller **735** is mechanically linked to the drive gear of the second take-up roller **730** such that when the drive gear of the first film take-up roller **735** rotates the drive gear of the second take-up roller **730** rotates.

**[0111]** To facilitate the operative engagement of the first film take-up roller **735** with the drive mechanism **840**, a portion of the drive gear of the first film take-up roller **735** is located

outside the housing of the food dispensing module **700**, thereby exposing a portion of the drive gear to the drive mechanism **840**.

**[0112]** Alternatively, the second take-up roller **730** may be operatively engaged to the drive mechanism **840** so that the drive mechanism **840** can control the rotation of the second film take-up roller **730** via its associated drive gear. To facilitate the operative engagement of the second film take-up roller **730** with the drive mechanism **840**, a portion of the drive gear of the second film take-up roller **730** would be located outside the housing of the food dispensing module **700**, thereby exposing a portion of the drive gear to the drive mechanism **840**.

**[0113]** As illustrated in Figure 17, each take-up roller includes an associated trap void **750** which collects residual food product, such as blood, etc. Having a trap void **750** associated with each take-up roller allows flexibility in the orientation of the food dispensing module **700** within the delaminating food dispensing system.

**[0114]** Alternatively, the food dispensing module **700** may only include a single trap void which collects residual food product, such as blood, etc.

**[0115]** Figure 18 illustrates another view of the food dispensing module for a delaminating food dispensing system of Figure 17. As illustrated in Figure 18, the delaminating process is driven by a first film take-up roller and a second take-up roller.

**[0116]** The first take-up roller includes a drive gear **841**, which mechanically rotates the first take-up rollers of Figure 17. The second take-up roller includes a drive gear **843**, which mechanically rotates the second take-up rollers of Figure 17.

**[0117]** Each take-up roller, upon rotation, rolls one of the films upon itself, driving the laminated food product from its storage location to a location for being dispensed from the food dispensing module **700** from an opening **761**.

**[0118]** As illustrated in Figure 18, the drive gear **841** is operatively engaged to a drive mechanism so that the drive mechanism can control the rotation of the first film take-up roller via its associated drive gear **841**.

**[0119]** In the embodiment of Figure 18, the drive gear **841** of the first film take-up roller is mechanically linked to the drive gear **843** of the second take-up roller such that when the drive gear **841** of the first film take-up roller rotates the drive gear **843** of the second take-up roller rotates.

**[0120]** To facilitate the operative engagement of the drive gear **841** with the drive mechanism (not shown), a portion of the drive gear **841** of the first film take-up roller may be located outside the housing of the food dispensing module **700**, thereby exposing a portion of the drive gear **841** to the drive mechanism.



**[0121]** Alternatively, the second take-up roller may be operatively engaged to a drive mechanism so that the drive mechanism can control the rotation of the second film take-up roller via its associated drive gear **843**. To facilitate the operative engagement of the second film take-up roller with the drive mechanism, a portion of the drive gear **843** of the second film take-up roller would be located outside the housing of the food dispensing module **700**, thereby exposing a portion of the drive gear **843** to the drive mechanism.

**[0122]** It is noted that the drive mechanism associated with the drive gear **843** may be driven independently of the drive mechanism associated with the drive gear **841**.

**[0123]** As illustrated in Figure 18, each take-up roller includes an associated trap void **750** which collects residual food product, such as blood, etc. Having a trap void **750** associated with each take-up roller allows flexibility in the orientation of the food dispensing module **700** within the delaminating food dispensing system.

**[0124]** Alternatively, the food dispensing module **700** may only include a single trap void which collects residual food product, such as blood, etc.

**[0125]** Figure 19 illustrates a bottom dispensing food dispensing module for a delaminating food dispensing system. As illustrated in Figure 19, the housing of the food dispensing module **700** shows that the dispensing output member **790** (for dispensing delaminated food product **720**) is located at the bottom of the food dispensing module **700**. The housing of the dispensing output member **790** shows that an opening **780** is provided to enable the operative engagement of between a drive gear of a take-up roller and a drive mechanism.

**[0126]** Although, in Figure 19, the opening **780** is illustrated at the top of the dispensing output member **790**, it can alternatively be located at the bottom of the dispensing output member **790**.

**[0127]** Figure 20 illustrates a top dispensing food dispensing module for a delaminating food dispensing system. As illustrated in Figure 20, the housing of the food dispensing module **700** shows that the dispensing output member **790** (for dispensing delaminated food product **720**) of the dispensing food dispensing module **790** is located at the top of the food dispensing module **700**. The housing of the dispensing food dispensing module **790** shows that an opening **780** is provided to enable the operative engagement of between a drive gear of a take-up roller and a drive mechanism.

**[0128]** Although, in Figure 20, the opening **780** is illustrated at the top of the dispensing output member **790**, it can alternatively be located at the bottom of the dispensing output member **790**.

[0129] Figure 21 illustrates dual dispensing food dispensing modules for a delaminating food dispensing system, wherein one food dispensing module is located above the other food dispensing module. As illustrated in Figure 21, each food dispensing module **700** engages a drive mechanism **847** that is driven by an associated motor **850**.

[0130] It is noted that the drive mechanisms and associated motors can be operated independently or dependently.

[0131] As illustrated in Figure 21, the drive mechanism **847** for the top food dispensing module is located above the associated delaminating unit **790**, and the drive mechanism **840** for the bottom food dispensing module is located below the associated delaminating unit **790**.

[0132] It is noted that a drive mechanism **845**, alternatively, may be located between the delaminating units **790** such that the drive mechanism **845** for the top food dispensing module **700** is located below the associated delaminating unit **790** and the drive mechanism **845** for the bottom food dispensing module **700** is located above the associated delaminating unit **790**.

[0133] The dual dispensing food dispensing modules dispense delaminated food product **720** onto a receiving area **260**.

[0134] As previously noted the dispensing of the delaminated food product **725** from the top food dispensing module may be independent of the dispensing of the delaminated food product **725** from the bottom food dispensing module.

[0135] Figure 22 illustrates a food dispensing module within a delaminating food dispensing system. As illustrated in Figure 22, a food dispensing module **700** for a delaminating food dispensing system **100** includes an outer housing **705** and a delaminating housing **790**. The delaminating housing **790** has a first portion which is located within the outer housing **705** and a second portion located outside the outer housing **705**.

[0136] The delaminating housing **790** includes delaminating nips **740** for delaminating the food product **500** from the films **710** prior to dispensing. To facilitate the delamination process, the delaminating housing **790** includes a first film take-up roller **735** and a second film take-up roller **730**. The first film take-up roller **735** and second film take-up roller **730** take-up the film **710**, thereby pulling the film by delaminating nips **740** to delaminate the food product **500** from the films **710** prior to dispensing the food product **500** through output opening **795**.

[0137] As illustrated in Figure 22, each take-up roller includes an associated trap void **750** which collects residual food product, such as blood, etc. Having a trap void **750** associated with each take-up roller allows flexibility in the orientation of the food dispensing module **700** within the delaminating food dispensing system.

[0138] Moreover, as illustrated in Figure 22, the output opening **795** is located in the second portion of the delaminating housing **790**.

[0139] The first film take-up roller **735** includes a first drive gear (not shown) and the second film take-up roller **730** includes a second drive gear (not shown).

[0140] It is noted that the first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

[0141] A portion of the first drive gear is located outside the delaminating housing **790** and outside the outer housing **705** to engage drive mechanism **840**.

[0142] It is noted that a portion of the second drive gear may be located outside the delaminating housing **790** and outside the outer housing **705** to engage drive mechanism **840**.

[0143] The delaminating housing **790** may be detachably attached to the outer housing **705**.

[0144] The outer housing **705** may be constructed of bio-degradable material or disposable material.

[0145] It is further noted that the delaminating housing **790** and its various elements (first film take-up roller **735**, second film take-up roller **730**, delaminating nips **740**, and drive gears) may, after use, be properly cleaned and sanitized and reused in a new food dispensing module.

[0146] It is noted that the delaminating food dispensing system **100** may include tracks, rails, grooves, etc. (not shown) that physically engage the food dispensing module **700** to guide the food dispensing module **700** into its proper location within the delaminating food dispensing system **100** so that the drive gears can operatively engage the drive mechanism **840**.

[0147] It is further noted that the food dispensing module **700** may include tracks, rails, grooves, etc. (not shown) that physically engage the delaminating food dispensing system **100** to guide the food dispensing module **700** into its proper location within the delaminating food dispensing system **100** so that the drive gears can operatively engage the drive mechanism **840**.

[0148] Figure 23 illustrates another food dispensing module within a delaminating food dispensing system. As illustrated in Figure 23, a food dispensing module **700** for a delaminating food dispensing system **100** includes an outer housing **705** and a delaminating housing **790**. The delaminating housing **790** has a first portion which is located within the outer housing **705** and a second portion located outside the outer housing **705**.

[0149] The delaminating housing **790** includes delaminating nips **740** for delaminating the food product **500** from the films **710** prior to dispensing. To facilitate the delamination

process, the delaminating housing **790** includes a first film take-up roller **735** and a second film take-up roller **730**.

**[0150]** The first film take-up roller **735** and second film take-up roller **730** take-up the film **710**, thereby pulling the film by delaminating nips **740** to delaminate the food product **500** from the films **710** prior to dispensing the food product **500** through output opening **795**.

**[0151]** As illustrated in Figure 23, each take-up roller includes an associated trap void **750** which collects residual food product, such as blood, etc. Having a trap void **750** associated with each take-up roller allows flexibility in the orientation of the food dispensing module **700** within the delaminating food dispensing system.

**[0152]** Moreover, as illustrated in Figure 23, the output opening **795** is located in the second portion of the delaminating housing **790**.

**[0153]** The first film take-up roller **735** includes a first drive gear (not shown) and the second film take-up roller **730** includes a second drive gear (not shown).

**[0154]** A portion of the first drive gear is located outside the delaminating housing **790** and outside the outer housing **705** to engage a first drive mechanism **840**.

**[0155]** It is noted that a portion of the second drive gear may be located outside the delaminating housing **790** and outside the outer housing **705** to engage a second drive mechanism **841**.

**[0156]** The delaminating housing **790** may be detachably attached to the outer housing **705**.

**[0157]** The outer housing **705** may be constructed of bio-degradable material or disposable material.

**[0158]** It is further noted that the delaminating housing **790** and its various elements (first film take-up roller **735**, second film take-up roller **730**, delaminating nips **740**, and drive gears) may, after use, be properly cleaned and sanitized and reused in a new food dispensing module.

**[0159]** It is noted that the delaminating food dispensing system **100** may include tracks, rails, grooves, etc. (not shown) that physically engage the food dispensing module **700** to guide the food dispensing module **700** into its proper location within the delaminating food dispensing system **100** so that the drive gears can operatively engage the drive mechanisms (**840** and **841**).

**[0160]** It is further noted that the food dispensing module **700** may include tracks, rails, grooves, etc. (not shown) that physically engage the delaminating food dispensing system **100** to guide the food dispensing module **700** into its proper location within the delaminating food dispensing system **100** so that the drive gears can operatively engage the drive mechanisms (**840** and **841**).

**[0161]** In summary, a food dispensing module for a delaminating food dispensing system includes an outer housing; and a delaminating housing; the delaminating housing having a first portion being located within the outer housing and a second portion located outside the outer housing; the delaminating housing including delaminating nips, a first film take-up roller, a second film take-up roller, an output opening, and a trap void; the output opening being located in the second portion of the delaminating housing.

**[0162]** The first film take-up roller may include a first drive gear and the second film take-up roller includes a second drive gear.

**[0163]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

**[0164]** A portion of the first drive gear may be located outside the delaminating housing and outside the outer housing.

**[0165]** The portion of the first drive gear may be located outside the delaminating housing and outside the outer housing operatively engages a driving mechanism.

**[0166]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

**[0167]** A portion of the second drive gear may be located outside the delaminating housing and outside the outer housing.

**[0168]** The portion of the second drive gear may be located outside the delaminating housing and outside the outer housing operatively engages a driving mechanism.

**[0169]** A portion of the first drive gear may be located outside the delaminating housing and outside the outer housing and a portion of the second drive gear is located outside the delaminating housing and outside the outer housing.

**[0170]** The portion of the first drive gear may be located outside the delaminating housing and outside the outer housing operatively engages a driving mechanism and the portion of the second drive gear located outside the delaminating housing and outside the outer housing operatively engages the driving mechanism.

**[0171]** The portion of the first drive gear may be located outside the delaminating housing and outside the outer housing operatively engages a first driving mechanism and the portion of the second drive gear located outside the delaminating housing and outside the outer housing operatively engages a second driving mechanism.

**[0172]** The delaminating housing may be detachably attached to the outer housing.

**[0173]** The outer housing may include laminated food product.

**[0174]** The outer housing may be constructed of bio-degradable material.

**[0175]** The outer housing may be constructed of disposable material.

**[0176]** A delaminating food dispensing system includes a housing; a drive mechanism; a first food dispensing module; a second food dispensing module; a first food dispensing module opening; and a second food dispensing module opening; the first food dispensing module including a first food dispensing module outer housing, and a first food dispensing module delaminating housing; the first food dispensing module delaminating housing having a first portion being located within the first food dispensing module outer housing and a second portion located outside the first food dispensing module outer housing; the first food dispensing module delaminating housing including first food dispensing module delaminating nips, a first food dispensing module first film take-up roller, a first food dispensing module second film take-up roller, a first food dispensing module output opening, and a first food dispensing module trap void; the first food dispensing module output opening being located in the second portion of the first food dispensing module delaminating housing; the second food dispensing module including a second food dispensing module outer housing, and a second food dispensing module delaminating housing; the second food dispensing module delaminating housing having a first portion being located within the second food dispensing module outer housing and a second portion located outside the second food dispensing module outer housing; the second food dispensing module delaminating housing including second food dispensing module delaminating nips, a second food dispensing module first film take-up roller, a second food dispensing module second film take-up roller, a second food dispensing module output opening, and a second food dispensing module trap void; the second food dispensing module output opening being located in the second portion of the first food dispensing module delaminating housing.

**[0177]** The first food dispensing module may be located side-by-side with the second food dispensing module in the housing.

**[0178]** The first food dispensing module may be located above the second food dispensing module in the housing.

**[0179]** The first food dispensing module first film take-up roller may include a first drive gear; the first food dispensing module second film take-up roller including a second drive gear; the second food dispensing module first film take-up roller including a third drive gear; the second food dispensing module second film take-up roller including a fourth drive gear.

**[0180]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates and the third drive gear is mechanically linked to the fourth drive gear such that when the third drive gear rotates the fourth drive gear rotates.

**[0181]** A portion of the first drive gear may be located outside the first food dispensing module delaminating housing and outside the first food dispensing module outer housing

and a portion of the third drive gear is located outside the second food dispensing module delaminating housing and outside the second food dispensing module outer housing.

**[0182]** The portion of the first drive gear may be located outside the first food dispensing module delaminating housing and outside the first food dispensing module outer housing operatively engages the drive mechanism and the portion of the third drive gear located outside the second food dispensing module delaminating housing and outside the second food dispensing module outer housing operatively engages the drive mechanism.

**[0183]** A portion of the second drive gear may be located outside the first food dispensing module delaminating housing and outside the first food dispensing module outer housing and a portion of the fourth drive gear is located outside the second food dispensing module delaminating housing and outside the second food dispensing module outer housing.

**[0184]** The portion of the second drive gear may be located outside the first food dispensing module delaminating housing and outside the first food dispensing module outer housing operatively engages the drive mechanism and the portion of the fourth drive gear located outside the second food dispensing module delaminating housing and outside the second food dispensing module outer housing operatively engages the drive mechanism.

**[0185]** A portion of the first drive gear may be located outside the first food dispensing module delaminating housing and outside the first food dispensing module outer housing; a portion of the third drive gear may be located outside the second food dispensing module delaminating housing and outside the second food dispensing module outer housing; a portion of the second drive gear may be located outside the first food dispensing module delaminating housing and outside the first food dispensing module outer housing; and a portion of the fourth drive gear may be located outside the second food dispensing module delaminating housing and outside the second food dispensing module outer housing.

**[0186]** The portion of the first drive gear may be located outside the first food dispensing module delaminating housing and outside the first food dispensing module outer housing operatively engages the drive mechanism; the portion of the third drive gear located outside the second food dispensing module delaminating housing and outside the second food dispensing module outer housing operatively engaging the drive mechanism; the portion of the second drive gear located outside the first food dispensing module delaminating housing and outside the first food dispensing module outer housing operatively engaging the drive mechanism; and the portion of the fourth drive gear located outside the second food dispensing module delaminating housing and outside the second food dispensing module outer housing operatively engaging the drive mechanism.

**[0187]** The first food dispensing module delaminating housing may be detachably attached to the first food dispensing module outer housing and the second food dispensing module delaminating housing is detachably attached to the second food dispensing module outer housing.

**[0188]** The first food dispensing module outer housing may include laminated food product and the second food dispensing module outer housing may include laminated food product.

**[0189]** The first food dispensing module outer housing may be constructed of bio-degradable material and the second food dispensing module outer housing is constructed of bio-degradable material.

**[0190]** The first food dispensing module outer housing may be constructed of disposable material and the second food dispensing module outer housing is constructed of disposable material.

**[0191]** A food module for a food dispensing module used in a delaminating food dispensing system includes a first film having a first portion and a second portion; a second film having a first portion and a second portion; food product; a delaminating housing; a first delaminating nip; a second delaminating nip; a first film take-up roller; a second film take-up roller; an output opening; and a trap void; the food product being laminated between the first portion of the first film and the first portion of the second film; the second portion of the first film being detachably attached to the first film take-up roller; the second portion of the first film engaging the first delaminating nip; the second portion of the second film being detachably attached to the second film take-up roller; the second portion of the second film engaging the second delaminating nip.

**[0192]** The first film take-up roller may include a first drive gear and the second film take-up roller includes a second drive gear.

**[0193]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

**[0194]** A portion of the first drive gear may be located outside the delaminating housing.

**[0195]** The portion of the first drive gear may be located outside the delaminating housing engages a driving mechanism.

**[0196]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

**[0197]** A portion of the second drive gear may be located outside the delaminating housing.

**[0198]** The portion of the second drive gear may be located outside the delaminating housing engages a driving mechanism.



**[0199]** A portion of the first drive gear may be located outside the delaminating housing and a portion of the second drive gear is located outside the delaminating housing.

**[0200]** The portion of the first drive gear may be located outside the delaminating housing operatively engages a driving mechanism and the portion of the second drive gear located outside the delaminating housing operatively engages the driving mechanism.

**[0201]** The portion of the first drive gear may be located outside the delaminating housing operatively engages a first driving mechanism and the portion of the second drive gear located outside the delaminating housing operatively engages a second driving mechanism.

**[0202]** A delaminating food module includes a housing; a first delaminating nip; a second delaminating nip; a first film take-up roller; a second film take-up roller; an output opening; and a trap void.

**[0203]** The first film take-up roller may include a first drive gear and the second film take-up roller includes a second drive gear.

**[0204]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

**[0205]** A portion of the first drive gear may be located outside the housing.

**[0206]** The portion of the first drive gear may be located outside the housing enables engagement of a driving mechanism.

**[0207]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

**[0208]** A portion of the second drive gear may be located outside the housing.

**[0209]** The portion of the second drive gear may be located outside the housing enables engagement of a driving mechanism.

**[0210]** A portion of the first drive gear may be located outside the housing and a portion of the second drive gear is located outside the housing.

**[0211]** The portion of the first drive gear may be located outside the housing enables engagement of a driving mechanism and the portion of the second drive gear located outside the housing enables engagement of the driving mechanism.

**[0212]** The portion of the first drive gear may be located outside the housing enables engagement of a first driving mechanism and the portion of the second drive gear located outside the housing enables engagement of a second driving mechanism.

**[0213]** A delaminating food dispensing system includes a housing; a drive mechanism; a food dispensing module; and a food dispensing module opening; and the food dispensing module including an outer housing, and a delaminating housing; the delaminating housing having a first portion being located within the outer housing and a second portion located

outside the outer housing; the food dispensing module delaminating housing including, delaminating nips, a first film take-up roller, a second film take-up roller, an output opening, and a trap void; the output opening being located in the second portion of the delaminating housing.

**[0214]** The first film take-up roller may include a first drive gear and the second film take-up roller includes a second drive gear.

**[0215]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

**[0216]** A portion of the first drive gear may be located outside the housing.

**[0217]** The portion of the first drive gear may be located outside the housing enables engagement of a driving mechanism.

**[0218]** The first drive gear may be mechanically linked to the second drive gear such that when the first drive gear rotates the second drive gear rotates.

**[0219]** A portion of the second drive gear may be located outside the housing.

**[0220]** The portion of the second drive gear may be located outside the housing enables engagement of a driving mechanism.

**[0221]** A portion of the first drive gear may be located outside the housing and a portion of the second drive gear is located outside the housing.

**[0222]** The portion of the first drive gear may be located outside the housing enables engagement of a driving mechanism and the portion of the second drive gear located outside the housing enables engagement of the driving mechanism.

**[0223]** The portion of the first drive gear may be located outside the housing enables engagement of a first driving mechanism and the portion of the second drive gear located outside the housing enables engagement of a second driving mechanism.

**[0224]** It will be appreciated that variations of the above-disclosed embodiments and other features and functions, or alternatives thereof, may be desirably combined into many other different systems or applications. Also, various presently unforeseen or unanticipated alternatives, modifications, variations, or improvements therein may be subsequently made by those skilled in the art which are also intended to be encompassed by the description above and the following claims.

**What is claimed is:**

1. A food dispensing module for a delaminating food dispensing system comprising:  
an outer housing; and  
a delaminating housing;  
said delaminating housing having a first portion being located within said outer housing and a second portion located outside said outer housing;  
said delaminating housing including,  
delaminating nips,  
a first film take-up roller,  
a second film take-up roller,  
an output opening, and  
a trap void;  
said output opening being located in said second portion of said delaminating housing.
2. The food dispensing module as claimed in claim 1, wherein said first film take-up roller includes a first drive gear and said second film take-up roller includes a second drive gear.
3. The delaminating food dispensing module as claimed in claim 2, wherein said first drive gear is mechanically linked to said second drive gear such that when said first drive gear rotates said second drive gear rotates.
4. The food dispensing module as claimed in claim 2, wherein a portion of said first drive gear is located outside said delaminating housing and outside said outer housing.
5. The food dispensing module as claimed in claim 4, wherein said portion of said first drive gear located outside said delaminating housing and outside said outer housing operatively engages a driving mechanism.
6. The food dispensing module as claimed in claim 5, wherein said first drive gear is mechanically linked to said second drive gear such that when said first drive gear rotates said second drive gear rotates.
7. The food dispensing module as claimed in claim 2, wherein a portion of said second drive gear is located outside said delaminating housing and outside said outer housing.
8. The food dispensing module as claimed in claim 7, wherein said portion of said second drive gear located outside said delaminating housing and outside said outer housing operatively engages a driving mechanism.
9. The food dispensing module as claimed in claim 2, wherein a portion of said first drive gear is located outside said delaminating housing and outside said outer housing and a

portion of said second drive gear is located outside said delaminating housing and outside said outer housing.

10. The food dispensing module as claimed in claim 9, wherein said portion of said first drive gear located outside said delaminating housing and outside said outer housing operatively engages a driving mechanism and said portion of said second drive gear located outside said delaminating housing and outside said outer housing operatively engages the driving mechanism.

11. The food dispensing module as claimed in claim 9, wherein said portion of said first drive gear located outside said delaminating housing and outside said outer housing operatively engages a first driving mechanism and said portion of said second drive gear located outside said delaminating housing and outside said outer housing operatively engages a second driving mechanism.

12. The food dispensing module as claimed in claim 1, wherein said delaminating housing is detachably attached to said outer housing.

13. The food dispensing module as claimed in claim 1, wherein said outer housing includes laminated food product.

14. The food dispensing module as claimed in claim 1, wherein said outer housing is constructed of bio-degradable material.

15. The food dispensing module as claimed in claim 1, wherein said outer housing is constructed of disposable material.

16. A delaminating food dispensing system comprising:  
a housing;  
a drive mechanism;  
a first food dispensing module;  
a second food dispensing module;  
a first food dispensing module opening; and  
a second food dispensing module opening;  
said first food dispensing module including,  
    a first food dispensing module outer housing, and  
    a first food dispensing module delaminating housing;  
said first food dispensing module delaminating housing having a first portion being located within said first food dispensing module outer housing and a second portion located outside said first food dispensing module outer housing;  
said first food dispensing module delaminating housing including,  
    first food dispensing module delaminating nips,  
    a first food dispensing module first film take-up roller,

a first food dispensing module second film take-up roller,  
a first food dispensing module output opening, and  
a first food dispensing module trap void;  
said first food dispensing module output opening being located in said second portion  
of said first food dispensing module delaminating housing;  
said second food dispensing module including,  
a second food dispensing module outer housing, and  
a second food dispensing module delaminating housing;  
said second food dispensing module delaminating housing having a first portion  
being located within said second food dispensing module outer housing and a second  
portion located outside said second food dispensing module outer housing;  
said second food dispensing module delaminating housing including,  
second food dispensing module delaminating nips,  
a second food dispensing module first film take-up roller,  
a second food dispensing module second film take-up roller,  
a second food dispensing module output opening, and  
a second food dispensing module trap void;  
said second food dispensing module output opening being located in said second  
portion of said first food dispensing module delaminating housing.

17. The delaminating food dispensing system as claimed in claim 16, wherein said  
first food dispensing module is located side-by-side with said second food dispensing  
module in said housing.

18. The delaminating food dispensing system as claimed in claim 16, wherein said  
first food dispensing module is located above said second food dispensing module in said  
housing.

19. The delaminating food dispensing system as claimed in claim 16, wherein said  
first food dispensing module first film take-up roller includes a first drive gear;

said first food dispensing module second film take-up roller including a second drive  
gear;

said second food dispensing module first film take-up roller including a third drive  
gear;

said second food dispensing module second film take-up roller including a fourth  
drive gear.

20. The delaminating food dispensing system as claimed in claim 19, wherein said  
first drive gear is mechanically linked to said second drive gear such that when said first  
drive gear rotates said second drive gear rotates and said third drive gear is mechanically

linked to said fourth drive gear such that when said third drive gear rotates said fourth drive gear rotates.

21. The delaminating food dispensing system as claimed in claim 19, wherein a portion of said first drive gear is located outside said first food dispensing module delaminating housing and outside said first food dispensing module outer housing and a portion of said third drive gear is located outside said second food dispensing module delaminating housing and outside said second food dispensing module outer housing.

22. The delaminating food dispensing system as claimed in claim 21, wherein said portion of said first drive gear located outside said first food dispensing module delaminating housing and outside said first food dispensing module outer housing operatively engages said drive mechanism and said portion of said third drive gear located outside said second food dispensing module delaminating housing and outside said second food dispensing module outer housing operatively engages said drive mechanism.

23. The delaminating food dispensing system as claimed in claim 19, wherein a portion of said second drive gear is located outside said first food dispensing module delaminating housing and outside said first food dispensing module outer housing and a portion of said fourth drive gear is located outside said second food dispensing module delaminating housing and outside said second food dispensing module outer housing.

24. The delaminating food dispensing system as claimed in claim 23, wherein said portion of said second drive gear located outside said first food dispensing module delaminating housing and outside said first food dispensing module outer housing operatively engages said drive mechanism and said portion of said fourth drive gear located outside said second food dispensing module delaminating housing and outside said second food dispensing module outer housing operatively engages said drive mechanism.

25. The delaminating food dispensing system as claimed in claim 19, wherein a portion of said first drive gear is located outside said first food dispensing module delaminating housing and outside said first food dispensing module outer housing;

a portion of said third drive gear being located outside said second food dispensing module delaminating housing and outside said second food dispensing module outer housing;

a portion of said second drive gear being located outside said first food dispensing module delaminating housing and outside said first food dispensing module outer housing;  
and

a portion of said fourth drive gear being located outside said second food dispensing module delaminating housing and outside said second food dispensing module outer housing.

26. The delaminating food dispensing system as claimed in claim 25, wherein said portion of said first drive gear located outside said first food dispensing module delaminating housing and outside said first food dispensing module outer housing operatively engages said drive mechanism;

said portion of said third drive gear located outside said second food dispensing module delaminating housing and outside said second food dispensing module outer housing operatively engaging said drive mechanism;

said portion of said second drive gear located outside said first food dispensing module delaminating housing and outside said first food dispensing module outer housing operatively engaging said drive mechanism; and

said portion of said fourth drive gear located outside said second food dispensing module delaminating housing and outside said second food dispensing module outer housing operatively engaging said drive mechanism.

27. The delaminating food dispensing system as claimed in claim 16, wherein said first food dispensing module delaminating housing is detachably attached to said first food dispensing module outer housing and said second food dispensing module delaminating housing is detachably attached to said second food dispensing module outer housing.

28. The delaminating food dispensing system as claimed in claim 16, wherein said first food dispensing module outer housing includes laminated food product and said second food dispensing module outer housing includes laminated food product.

29. The delaminating food dispensing system as claimed in claim 16, wherein said first food dispensing module outer housing is constructed of bio-degradable material and said second food dispensing module outer housing is constructed of bio-degradable material.

30. The delaminating food dispensing system as claimed in claim 16, wherein said first food dispensing module outer housing is constructed of disposable material and said second food dispensing module outer housing is constructed of disposable material.

31. A food module for a food dispensing module used in a delaminating food dispensing system comprising:

- a first film having a first portion and a second portion;
- a second film having a first portion and a second portion;
- food product;
- a delaminating housing;
- a first delaminating nip;
- a second delaminating nip;
- a first film take-up roller;

a second film take-up roller;  
an output opening; and  
a trap void;  
said food product being laminated between said first portion of said first film and said first portion of said second film;  
said second portion of said first film being detachably attached to said first film take-up roller;  
said second portion of said first film engaging said first delaminating nip;  
said second portion of said second film being detachably attached to said second film take-up roller;  
said second portion of said second film engaging said second delaminating nip.

32. The food module as claimed in claim 31, wherein said first film take-up roller includes a first drive gear and said second film take-up roller includes a second drive gear.

33. The food module as claimed in claim 32, wherein said first drive gear is mechanically linked to said second drive gear such that when said first drive gear rotates said second drive gear rotates.

34. The food module as claimed in claim 32, wherein a portion of said first drive gear is located outside said delaminating housing.

35. The food module as claimed in claim 34, wherein said portion of said first drive gear located outside said delaminating housing engages a driving mechanism.

36. The food module as claimed in claim 35, wherein said first drive gear is mechanically linked to said second drive gear such that when said first drive gear rotates said second drive gear rotates.

37. The food module as claimed in claim 32, wherein a portion of said second drive gear is located outside said delaminating housing.

38. The food module as claimed in claim 37, wherein said portion of said second drive gear located outside said delaminating housing engages a driving mechanism.

39. The food module as claimed in claim 32, wherein a portion of said first drive gear is located outside said delaminating housing and a portion of said second drive gear is located outside said delaminating housing.

40. The food module as claimed in claim 39, wherein said portion of said first drive gear located outside said delaminating housing operatively engages a driving mechanism and said portion of said second drive gear located outside said delaminating housing operatively engages the driving mechanism.

41. The food module as claimed in claim 39, wherein said portion of said first drive gear located outside said delaminating housing operatively engages a first driving



mechanism and said portion of said second drive gear located outside said delaminating housing operatively engages a second driving mechanism.

42. A delaminating food module comprising:

a housing;

a first delaminating nip;

a second delaminating nip;

a first film take-up roller;

a second film take-up roller;

an output opening; and

a trap void.

43. The delaminating food module as claimed in claim 42, wherein said first film take-up roller includes a first drive gear and said second film take-up roller includes a second drive gear.

44. The delaminating food module as claimed in claim 43, wherein said first drive gear is mechanically linked to said second drive gear such that when said first drive gear rotates said second drive gear rotates.

45. The delaminating food module as claimed in claim 43, wherein a portion of said first drive gear is located outside said housing.

46. The delaminating food module as claimed in claim 45, wherein said portion of said first drive gear located outside said housing enables engagement of a driving mechanism.

47. The delaminating food module as claimed in claim 46, wherein said first drive gear is mechanically linked to said second drive gear such that when said first drive gear rotates said second drive gear rotates.

48. The delaminating food module as claimed in claim 43, wherein a portion of said second drive gear is located outside said housing.

49. The delaminating food module as claimed in claim 48, wherein said portion of said second drive gear located outside said housing enables engagement of a driving mechanism.

50. The delaminating food module as claimed in claim 43, wherein a portion of said first drive gear is located outside said housing and a portion of said second drive gear is located outside said housing.

51. The delaminating food module as claimed in claim 50, wherein said portion of said first drive gear located outside said housing enables engagement of a driving mechanism and said portion of said second drive gear located outside said housing enables engagement of the driving mechanism.

52. The delaminating food module as claimed in claim 50, wherein said portion of said first drive gear located outside said housing enables engagement of a first driving mechanism and said portion of said second drive gear located outside said housing enables engagement of a second driving mechanism.

53. A delaminating food dispensing system comprising:

a housing;

a drive mechanism;

a food dispensing module; and

a food dispensing module opening; and

said food dispensing module including,

an outer housing, and

a delaminating housing;

said delaminating housing having a first portion being located within said outer housing and a second portion located outside said outer housing;

said food dispensing module delaminating housing including,

delaminating nips,

a first film take-up roller,

a second film take-up roller,

an output opening, and

a trap void;

said output opening being located in said second portion of said delaminating housing.

54. The delaminating food dispensing system as claimed in claim 53, wherein said first film take-up roller includes a first drive gear and said second film take-up roller includes a second drive gear.

55. The delaminating food dispensing system as claimed in claim 54, wherein said first drive gear is mechanically linked to said second drive gear such that when said first drive gear rotates said second drive gear rotates.

56. The delaminating food dispensing system as claimed in claim 54, wherein a portion of said first drive gear is located outside said housing.

57. The delaminating food dispensing system as claimed in claim 56, wherein said portion of said first drive gear located outside said housing enables engagement of a driving mechanism.

58. The delaminating food dispensing system as claimed in claim 57, wherein said first drive gear is mechanically linked to said second drive gear such that when said first drive gear rotates said second drive gear rotates.

59. The delaminating food dispensing system as claimed in claim 54, wherein a portion of said second drive gear is located outside said housing.

60. The delaminating food dispensing system as claimed in claim 59, wherein said portion of said second drive gear located outside said housing enables engagement of a driving mechanism.

61. The delaminating food dispensing system as claimed in claim 54, wherein a portion of said first drive gear is located outside said housing and a portion of said second drive gear is located outside said housing.

62. The delaminating food dispensing system as claimed in claim 61, wherein said portion of said first drive gear located outside said housing enables engagement of a driving mechanism and said portion of said second drive gear located outside said housing enables engagement of the driving mechanism.

63. The delaminating food dispensing system as claimed in claim 61, wherein said portion of said first drive gear located outside said housing enables engagement of a first driving mechanism and said portion of said second drive gear located outside said housing enables engagement of a second driving mechanism.

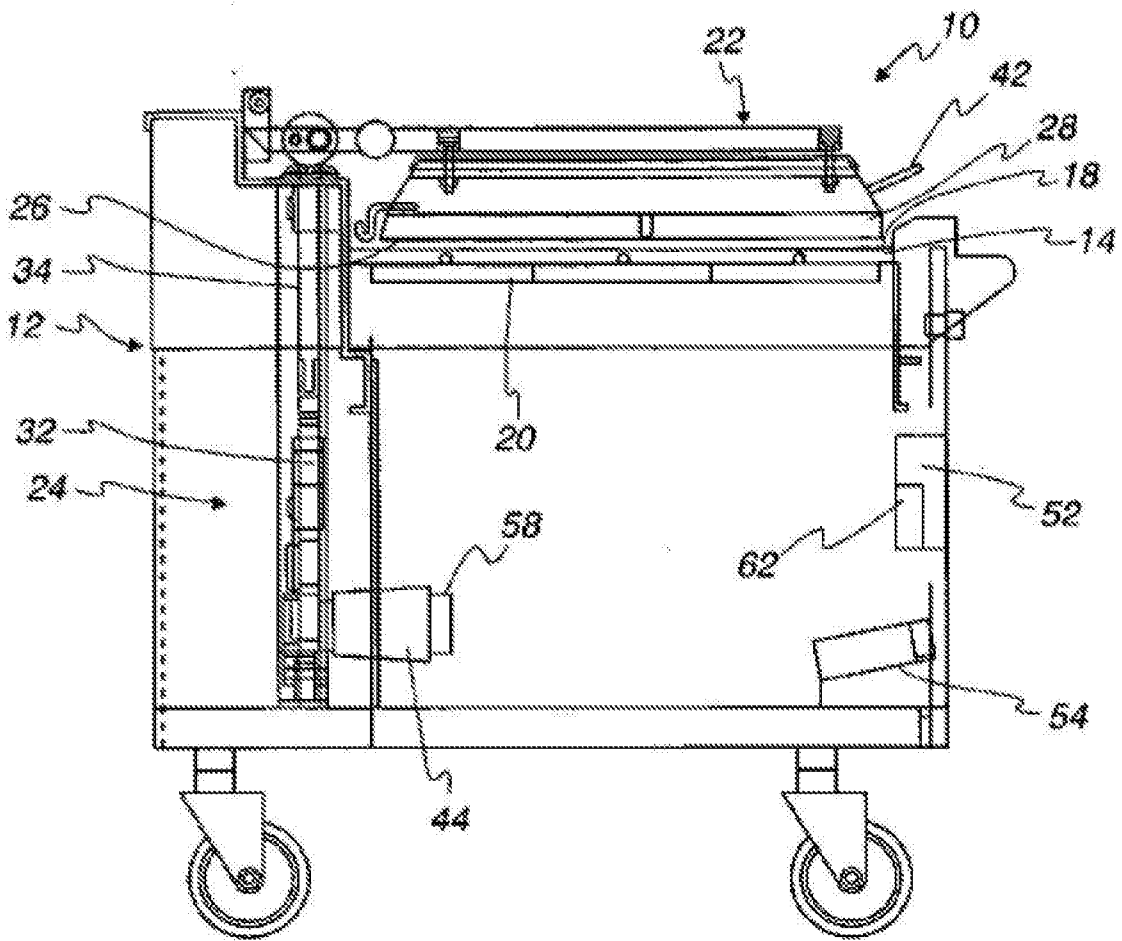


FIGURE 1

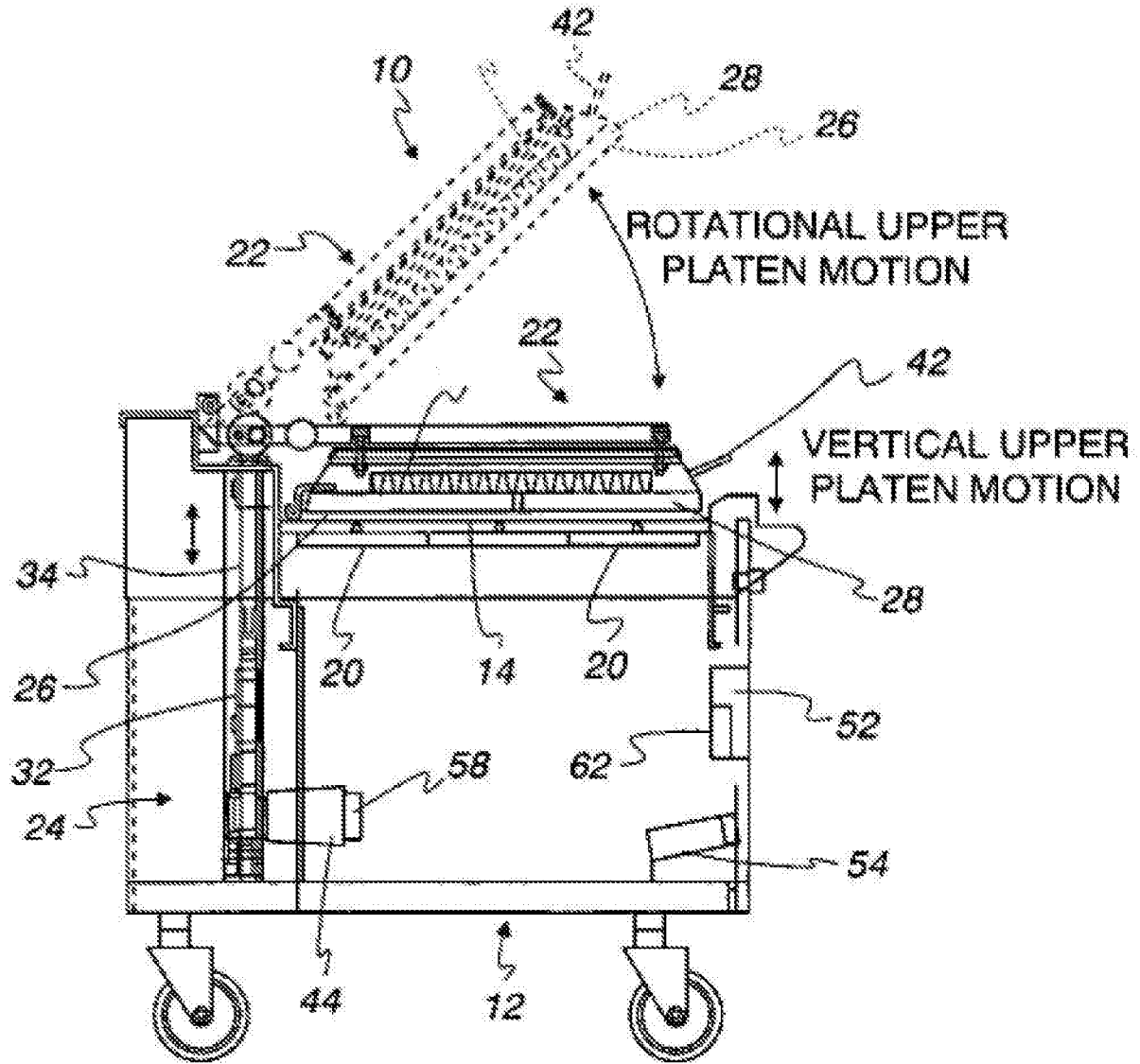


FIGURE 2

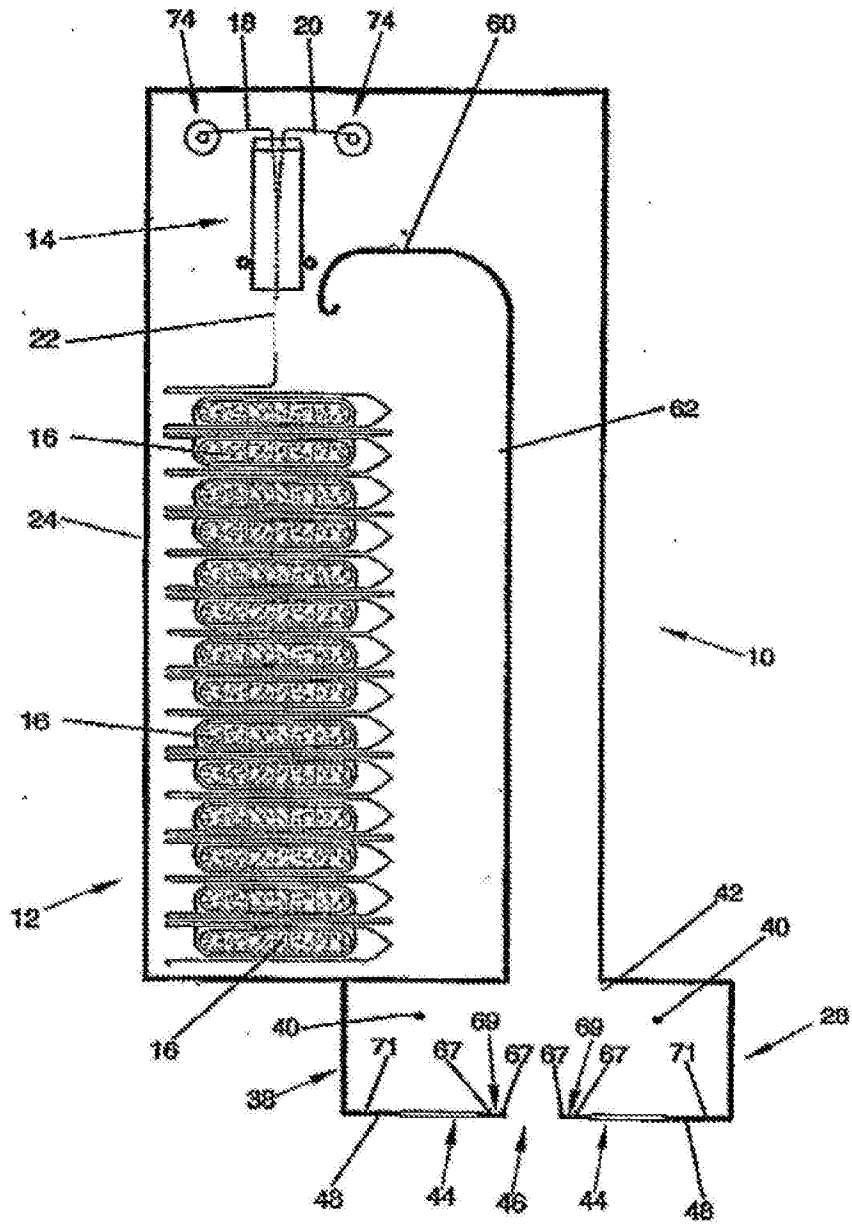


FIGURE 3

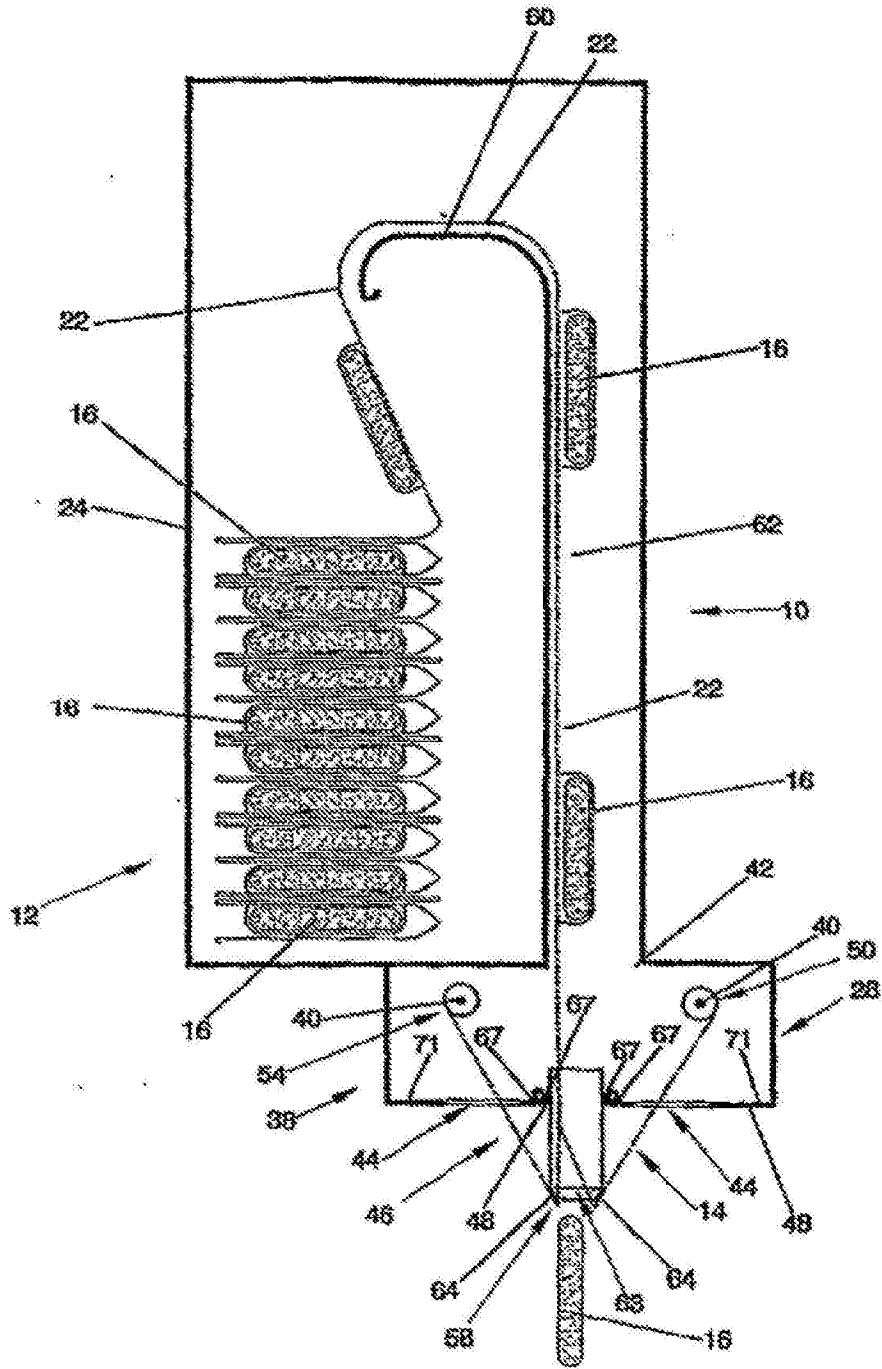


FIGURE 4

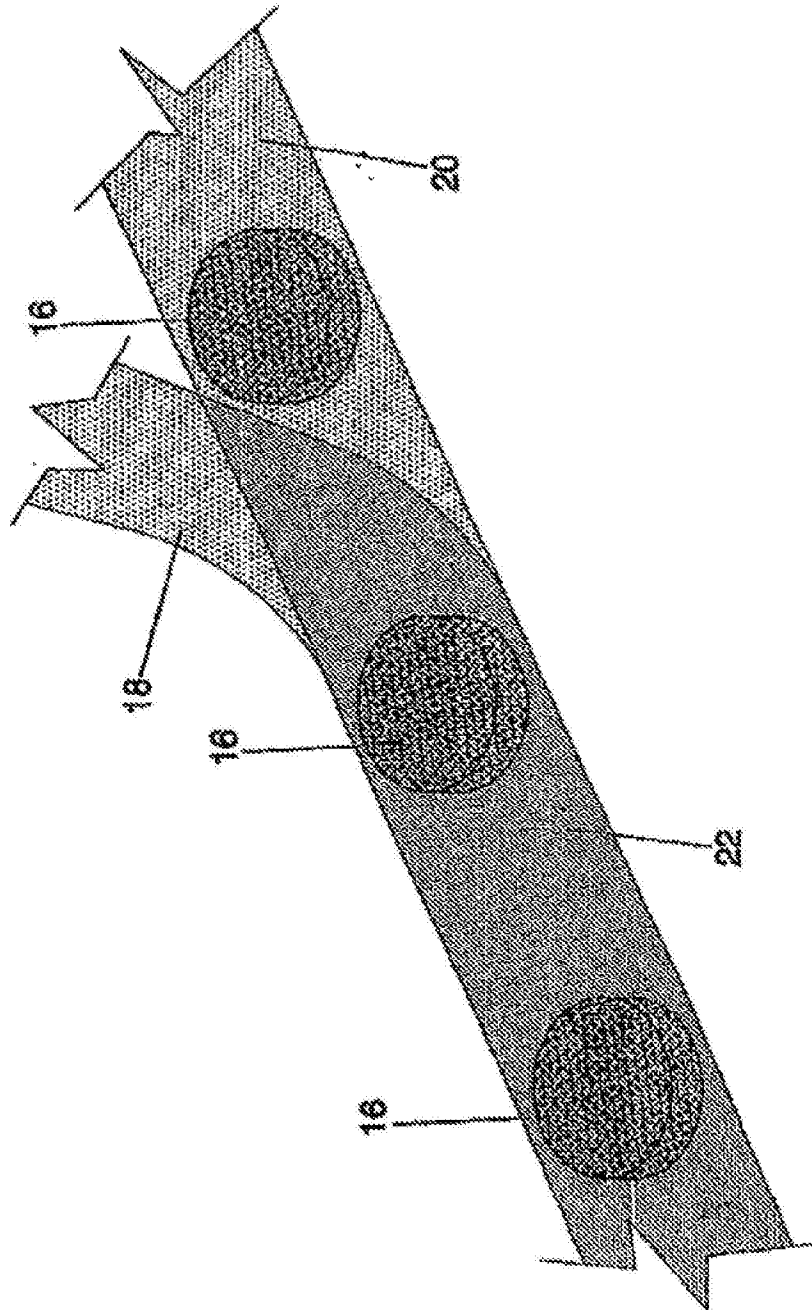


FIGURE 5



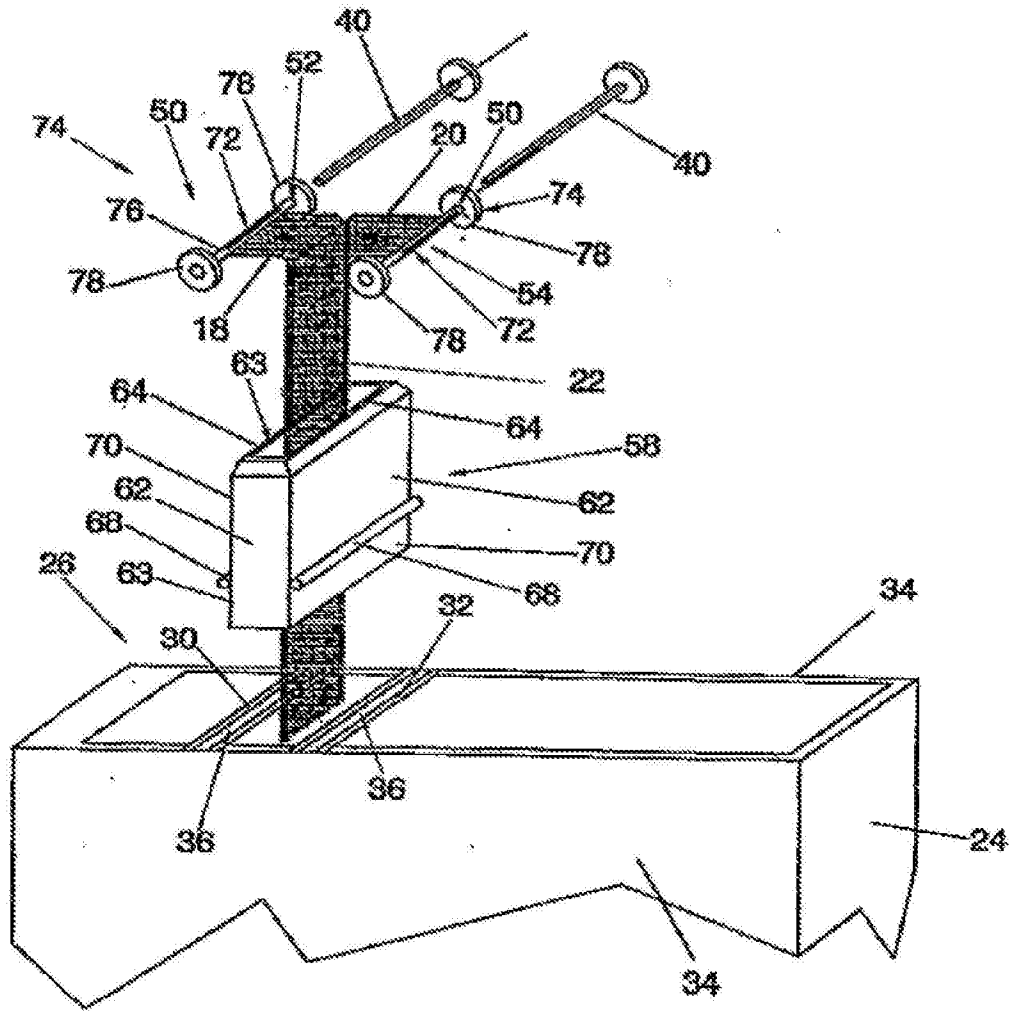


FIGURE 6



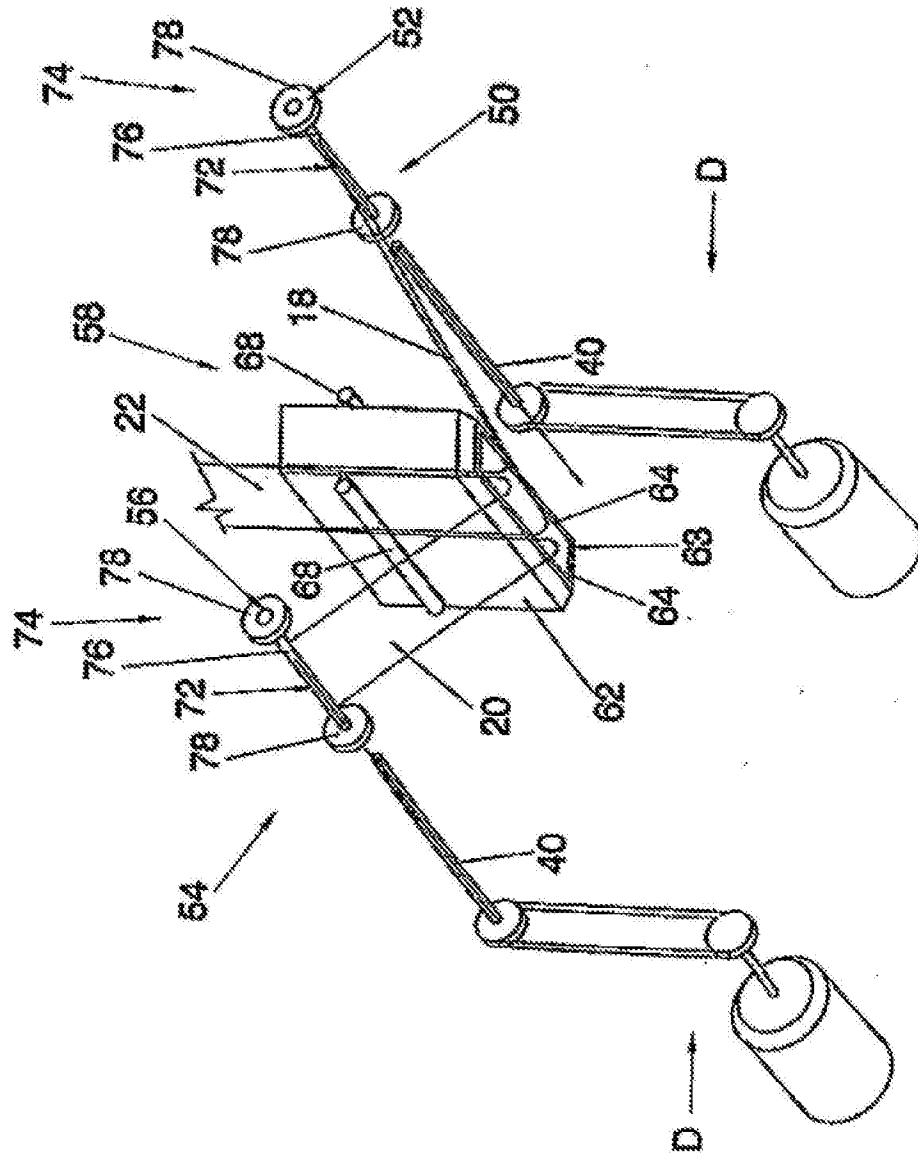


FIGURE 8

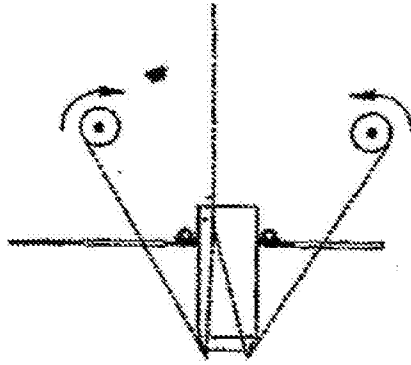


FIGURE 9

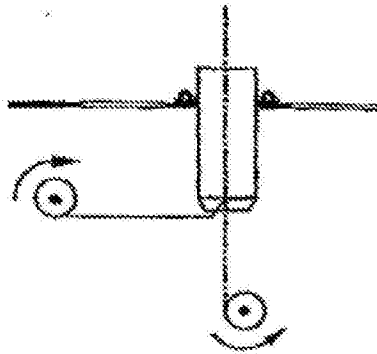


FIGURE 10

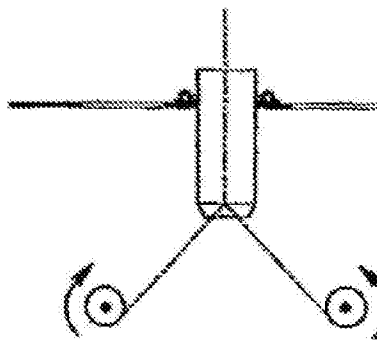


FIGURE 11

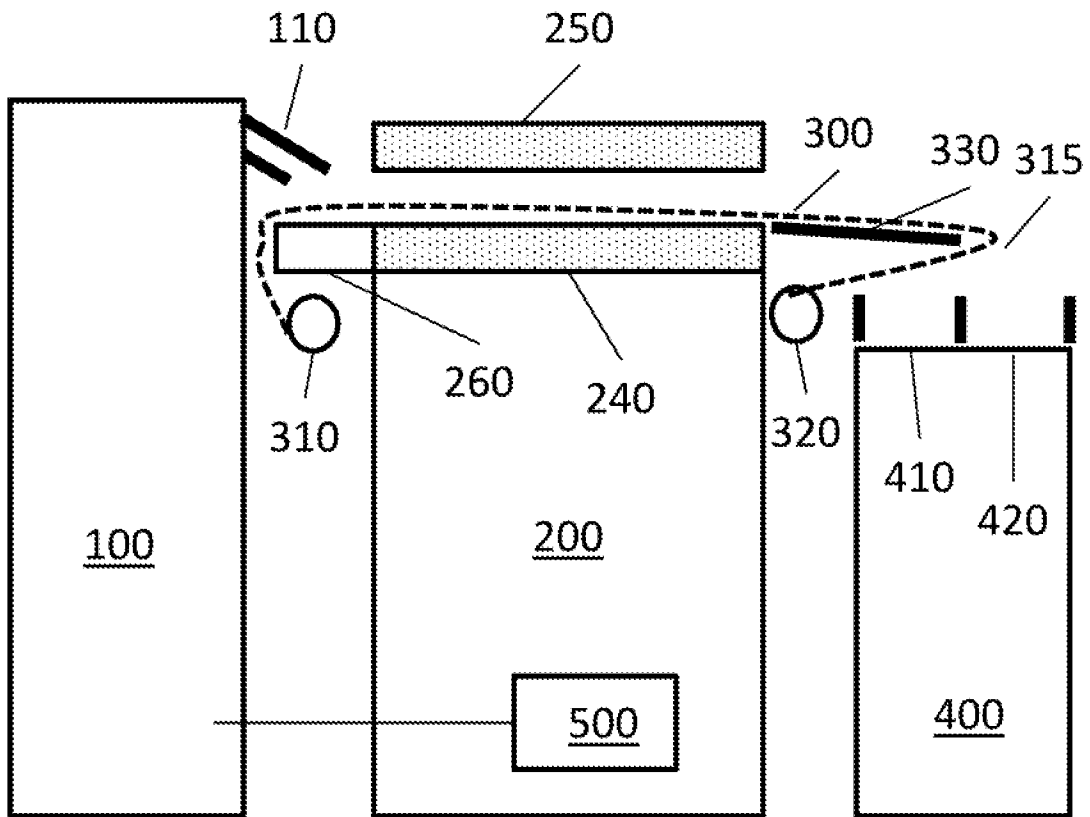


FIGURE 12

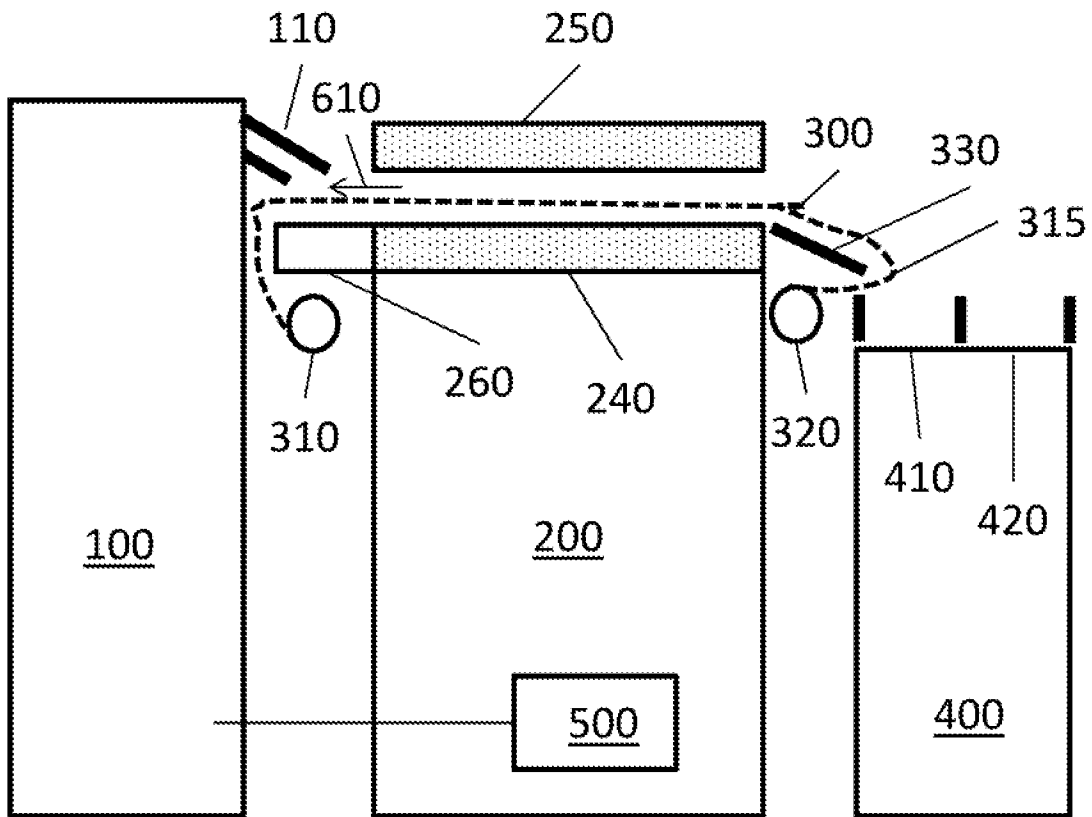


FIGURE 13



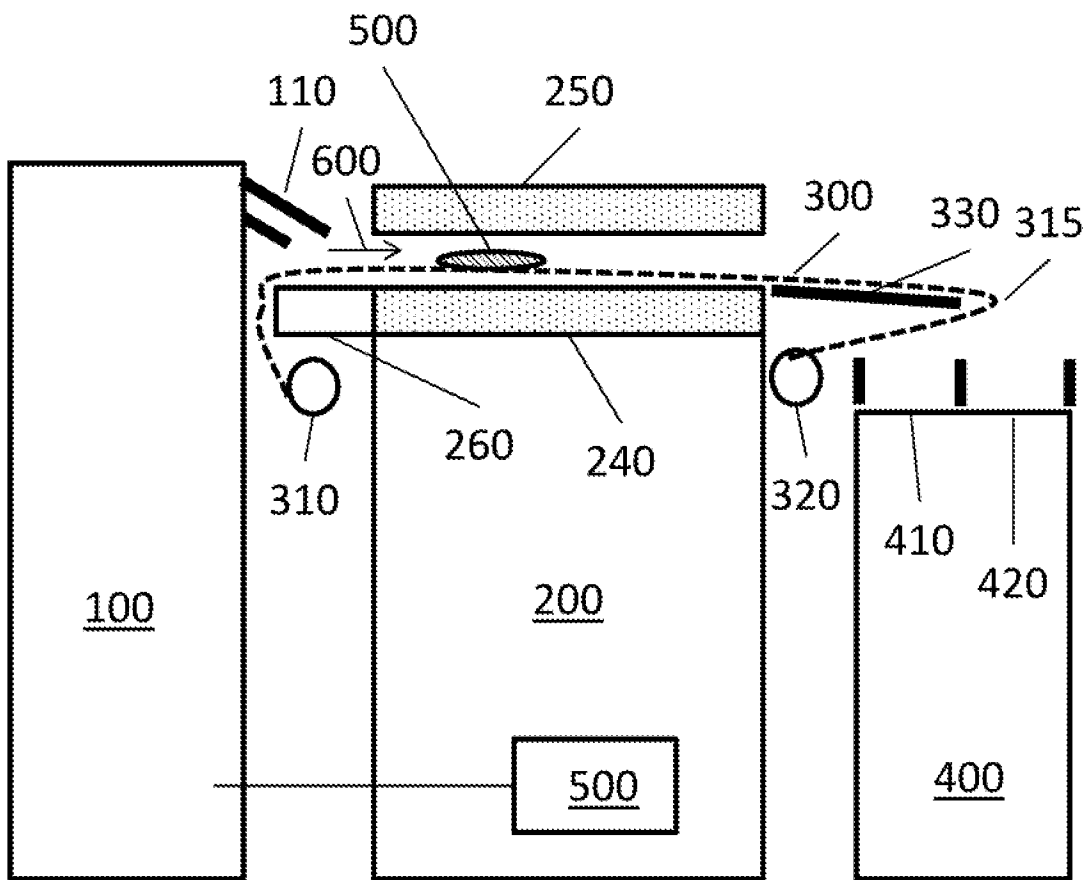


FIGURE 15



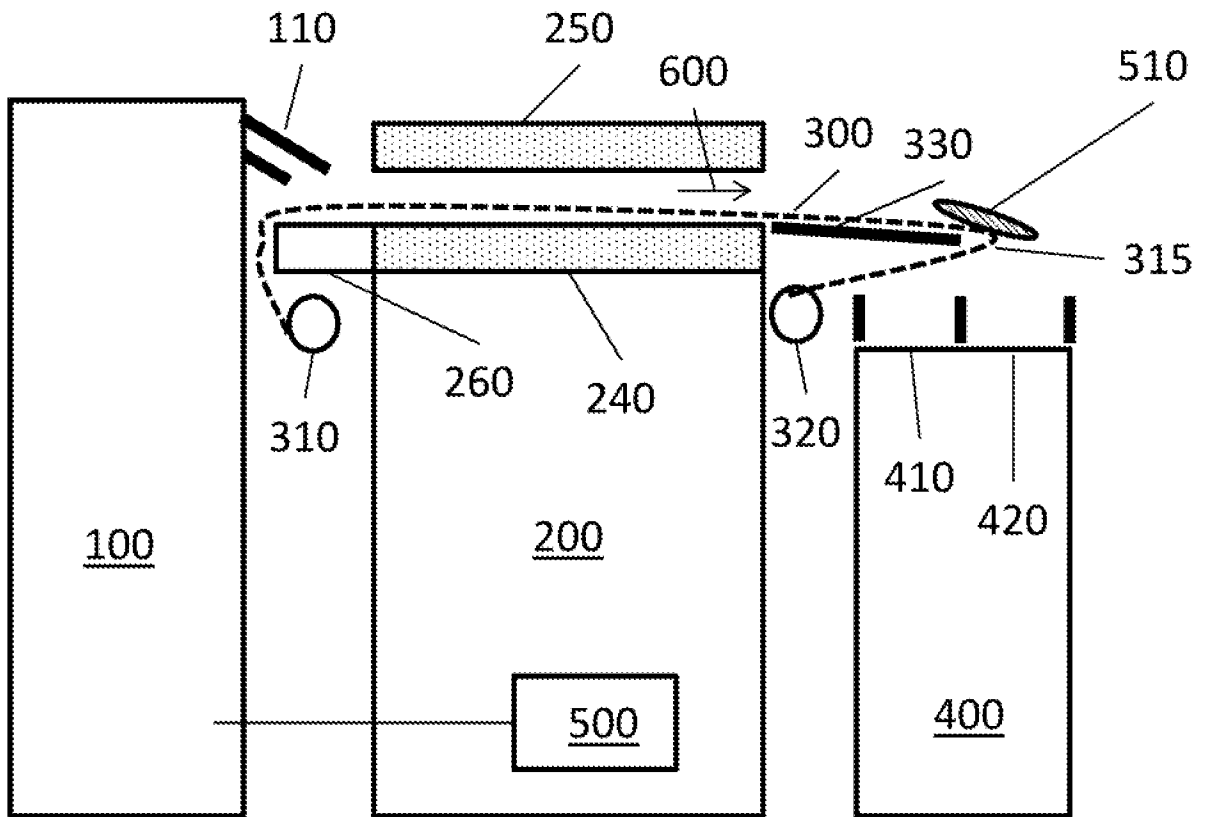


FIGURE 16

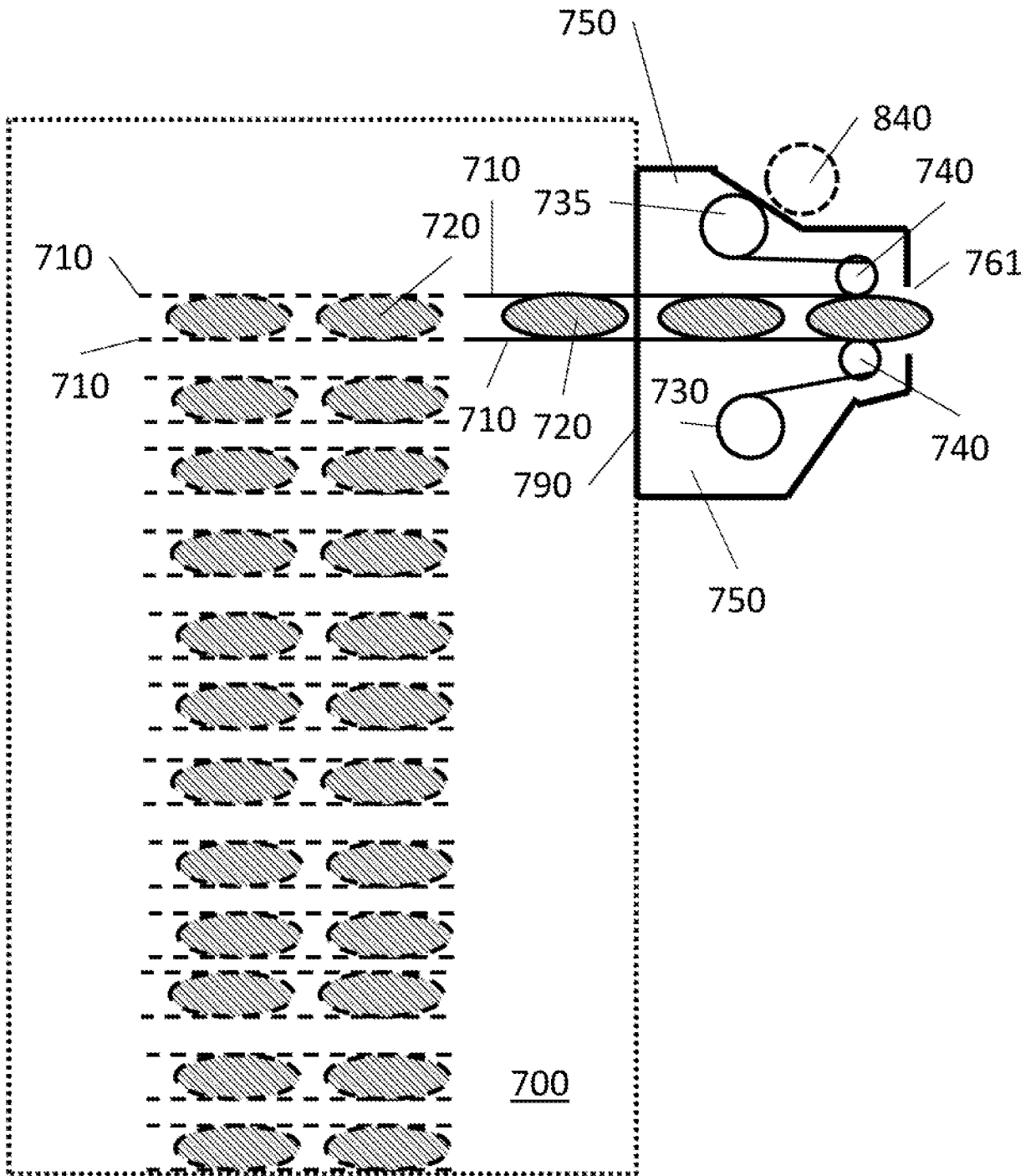


FIGURE 17

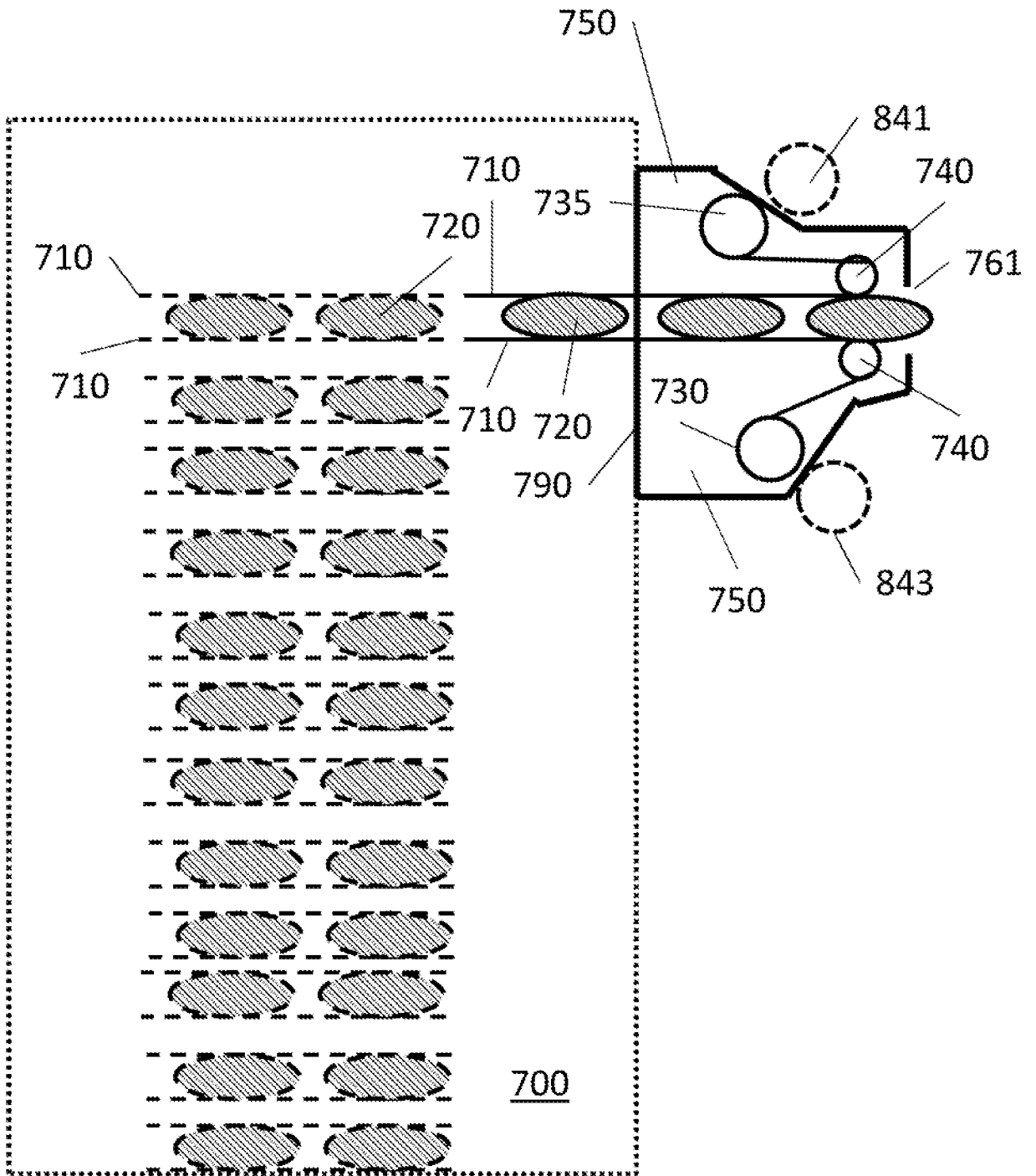


FIGURE 18

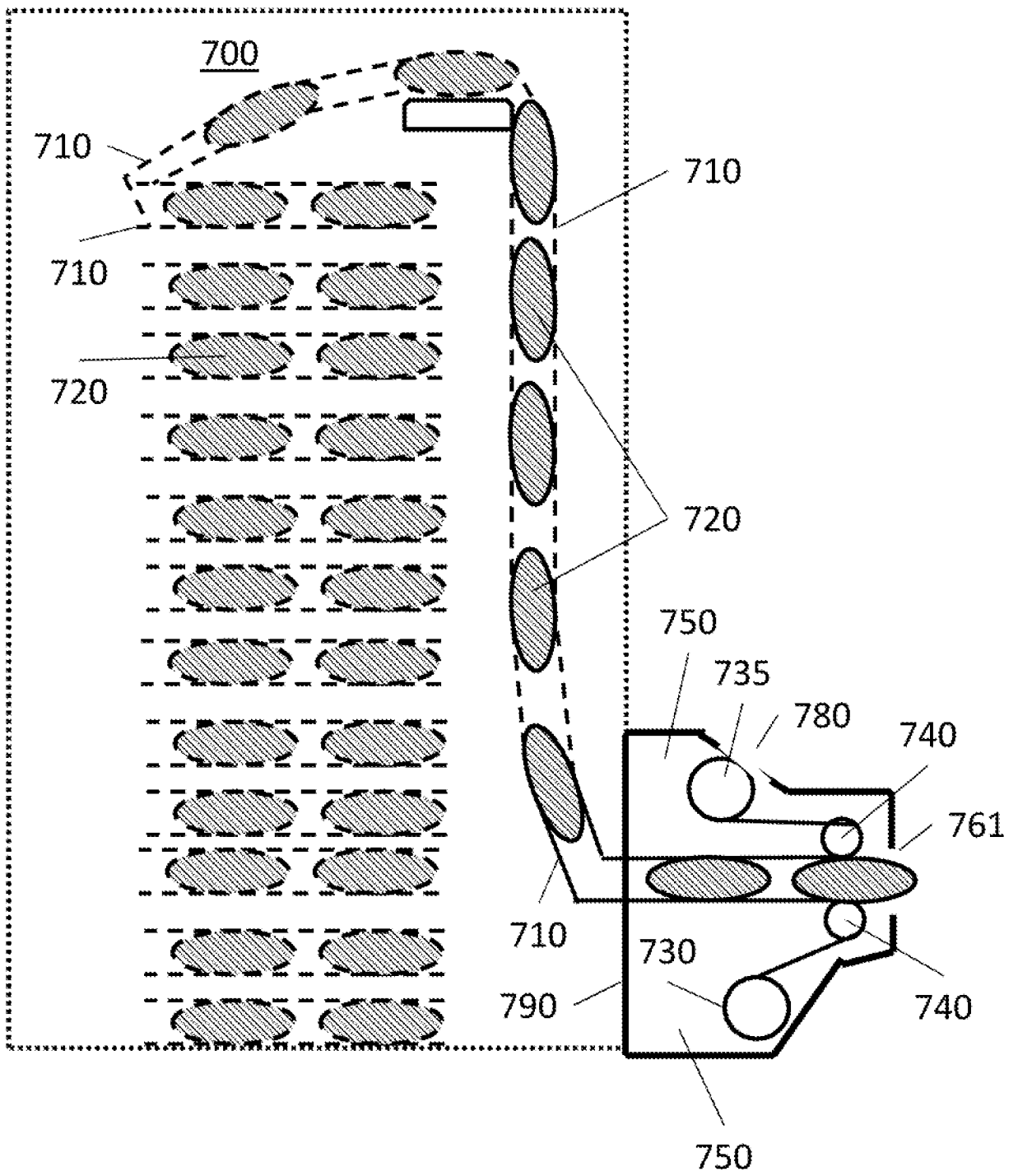


FIGURE 19

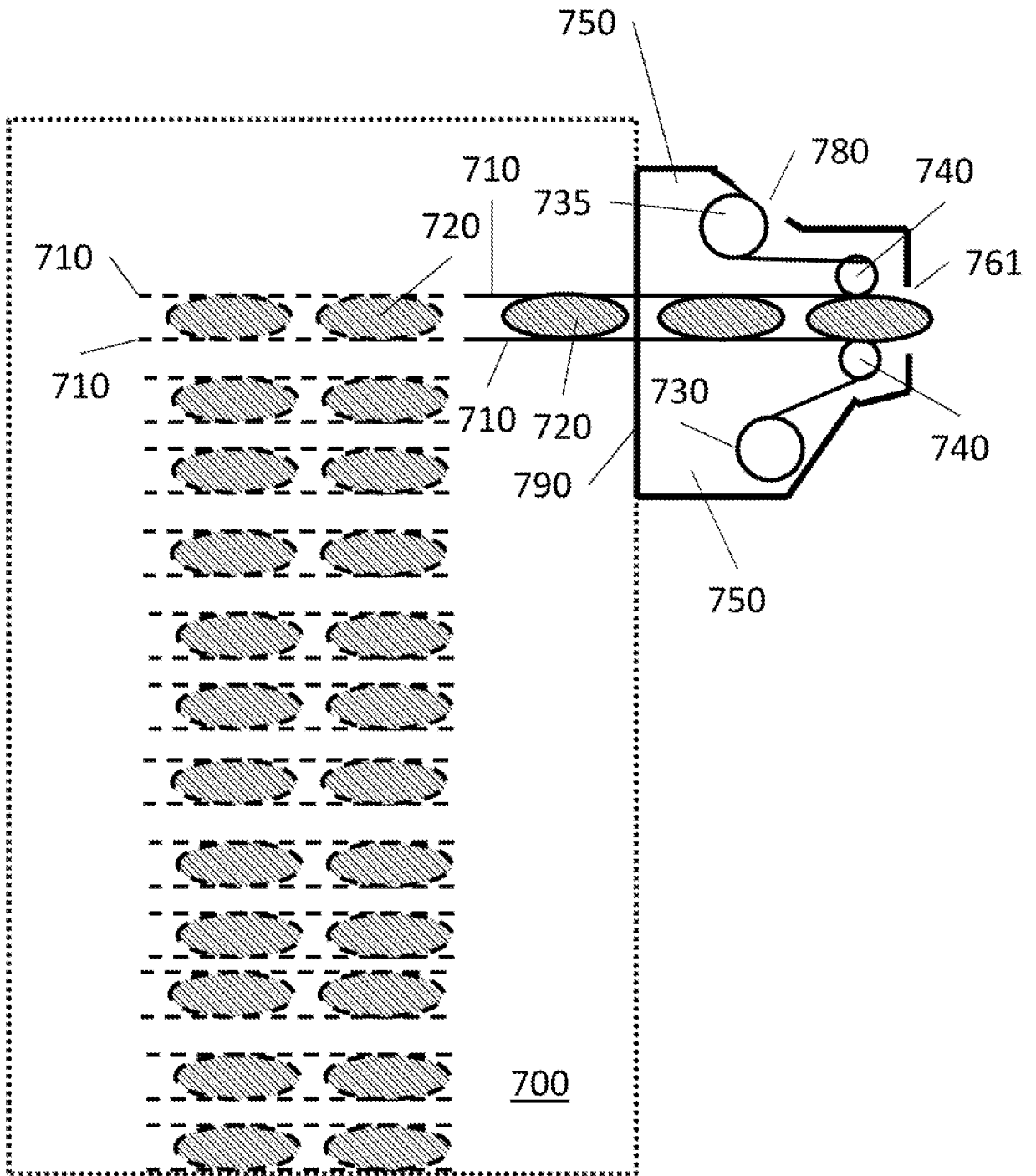


FIGURE 20

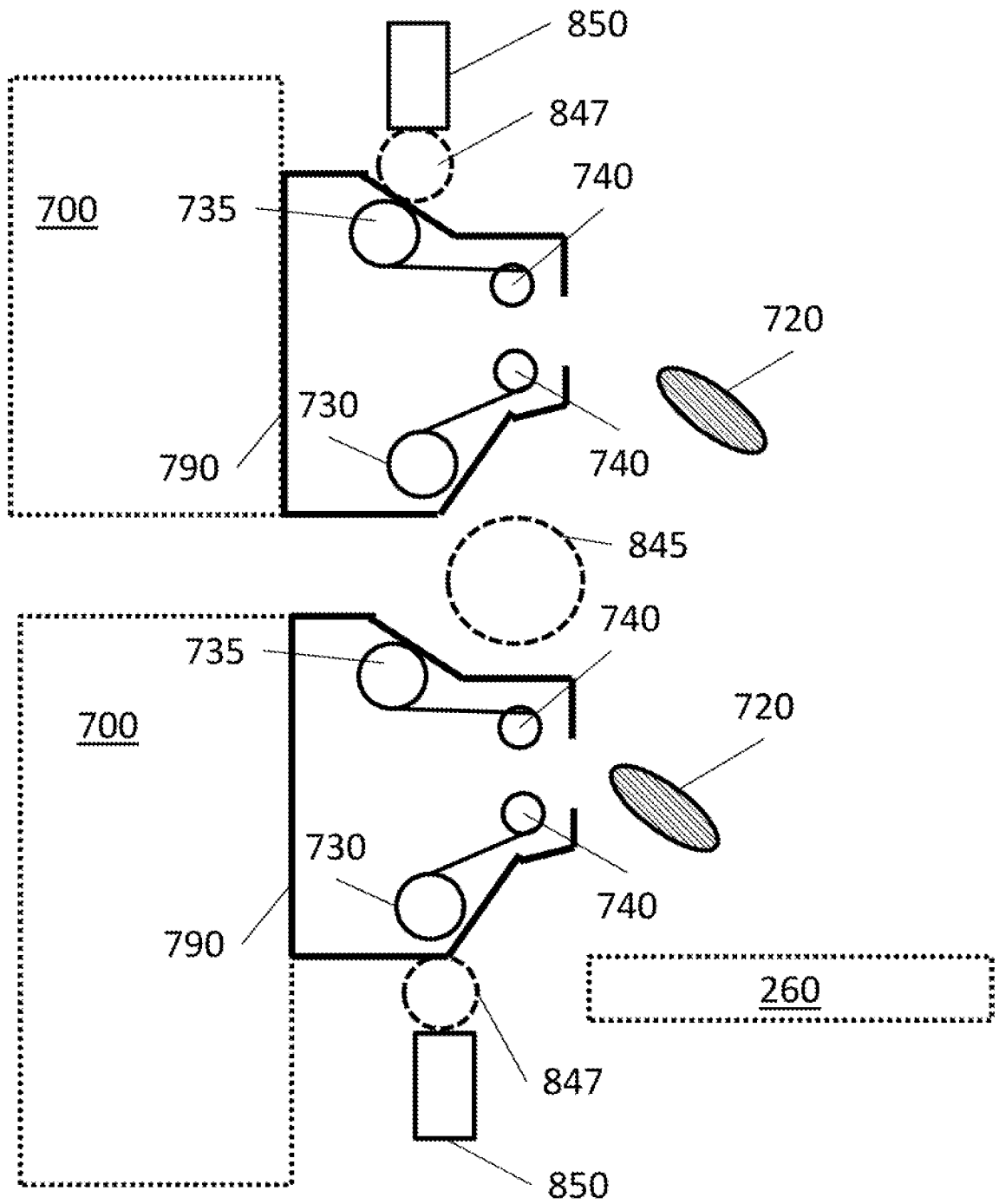


FIGURE 21

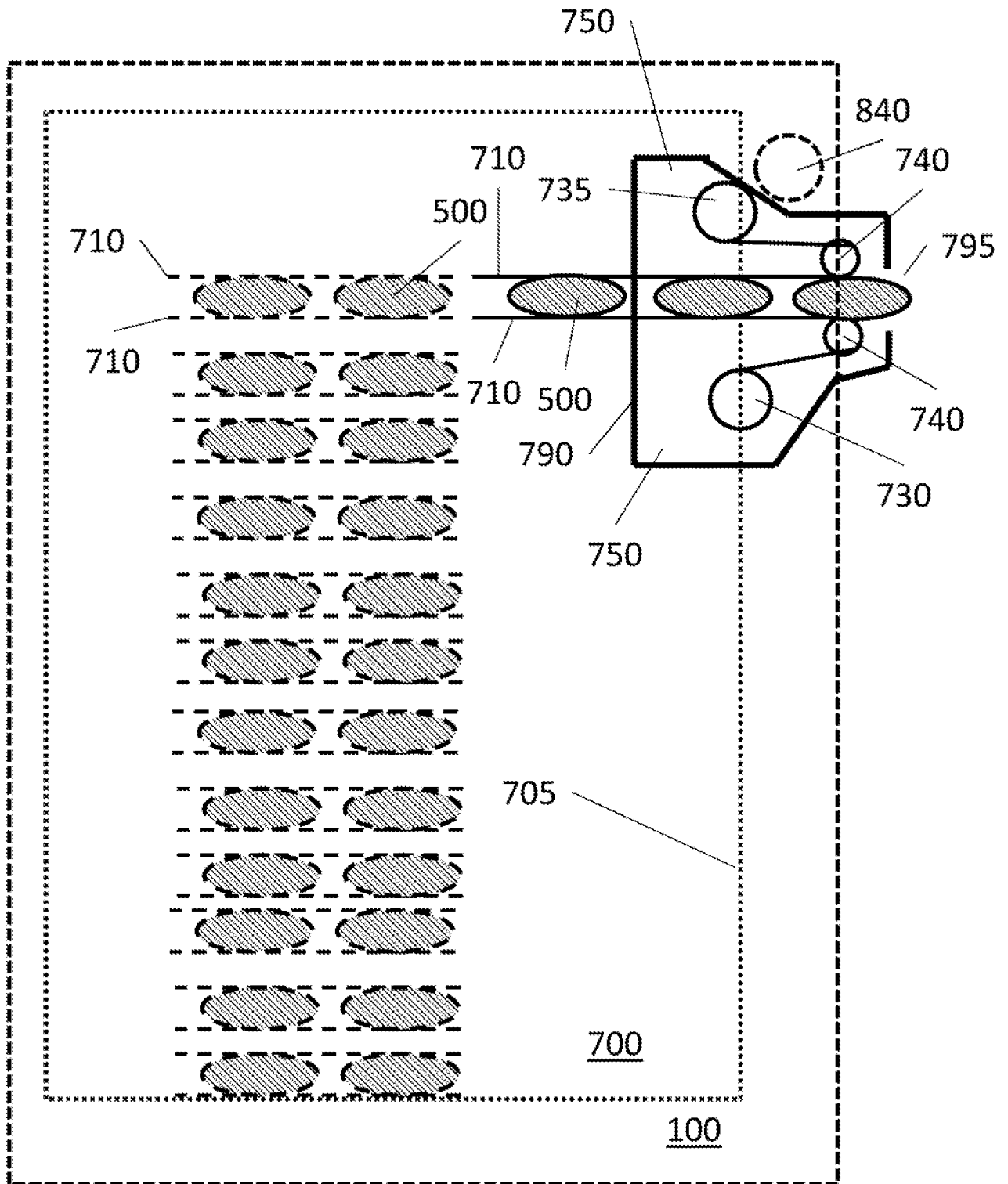


FIGURE 22

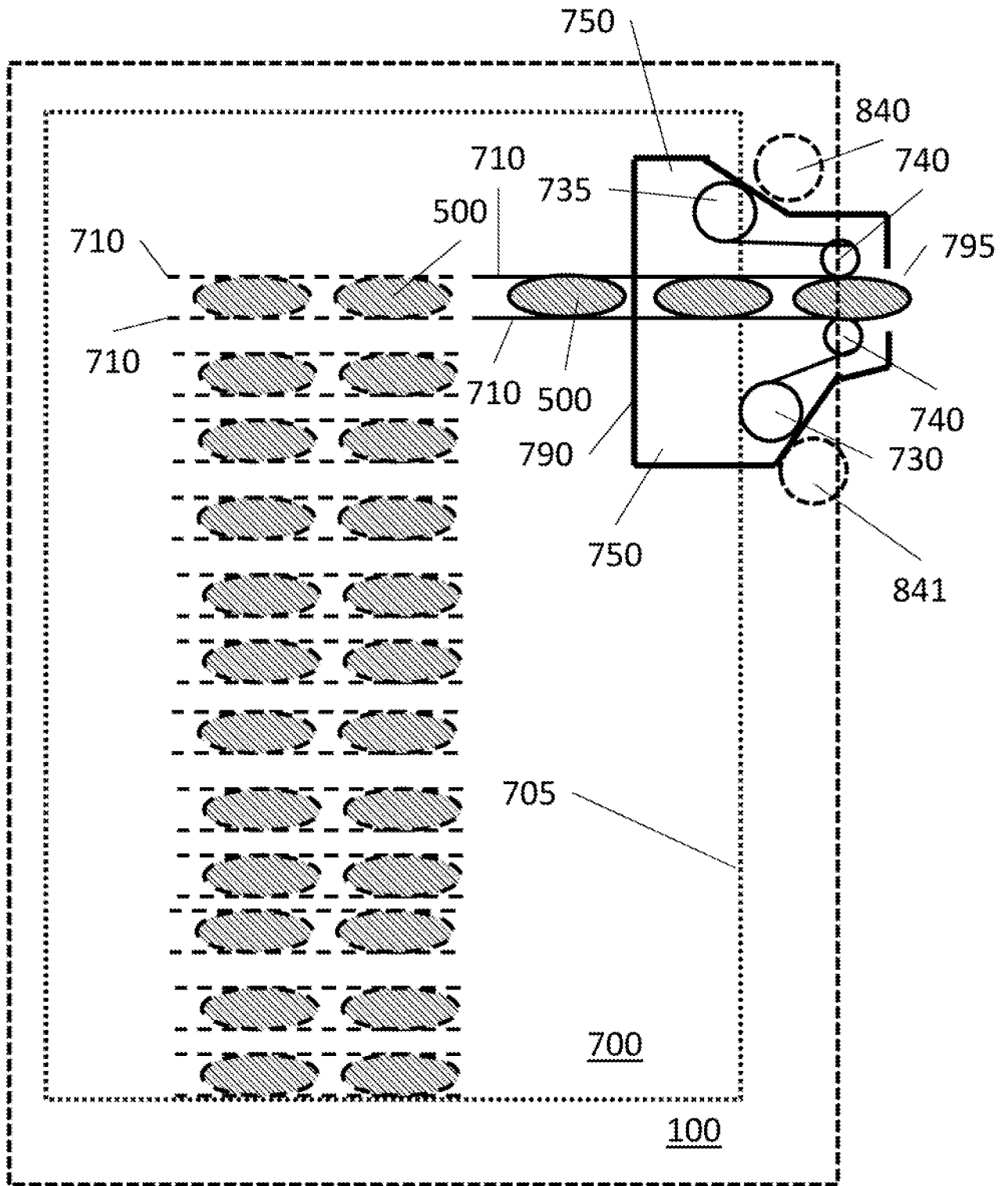


FIGURE 23



INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 18/63955

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC(8) - B65B 9/00, B65B 9/02, B65B 33/00, B65B 51/00, B65B 69/00, B65D 75/00, G07F 11/00 ('19.01)  
 CPC - B65B 9/00, B65B 9/02, B65B 9/045, B65B 9/06, B65B 9/067, B65B 9/073, B65B 25/00, B65B 33/00, B65B 51/00, B65B 69/00, B65D 75/00, B65D 75/58, G07F 11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
See Search History Document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
See Search History Document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
See Search History Document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category*                 | Citation of document, with indication, where appropriate, of the relevant passages                                    | Relevant to claim No.  |
|---------------------------|---|--|
| X<br>---<br>Y<br>---<br>A | WO 2013/117530 A1 (KRAFT FOODS R&D, INC.) 15 August 2013 (15.08.2013), entire document, especially Fig 1; pg 1 para 1 | 31, 42<br>-----<br>32-33, 43-44<br>-----<br>1-30, 34-41, 45-63 |
| Y<br>---<br>A             | US 2012/0151882 A1 (Nakano) 21 June 2012 (21.06.2012), entire document, especially Fig 1                              | 32-33, 43-44<br>-----<br>34-41, 45-52                          |
| A                         | US 2006/0261082 A1 (Almblad et al.) 23 November 2006 (23.11.2006), entire document                                    | 1-63   |
| A                         | US 2006/0283153 A1 (Nakano) 21 December 2006 (21.12.2006), entire document  | 1-63   |

Further documents are listed in the continuation of Box C.       See patent family annex.

\* Special categories of cited documents:

|   |  |
|---|--|
| "A" document defining the general state of the art which is not considered to be of particular relevance  | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  |
| "E" earlier application or patent but published on or after the international filing date   | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone   |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "O" document referring to an oral disclosure, use, exhibition or other means  | "&" document member of the same patent family  |
| "P" document published prior to the international filing date but later than the priority date claimed  |  |

|   |  |
|---|--|
| Date of the actual completion of the international search<br>27 February 2019 | Date of mailing of the international search report<br><b>27 MAR 2019</b> |
|---|--|

|   |  |
|---|--|
| Name and mailing address of the ISA/US<br>Mail Stop PCT, Attn: ISA/US, Commissioner for Patents<br>P.O. Box 1450, Alexandria, Virginia 22313-1450<br>Facsimile No. 571-273-8300 | Authorized officer:<br>Lee W. Young<br><br>PCT Helpdesk: 571-272-4300<br>PCT OSP: 571-272-7774 |
|---|--|