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(54) AN APPARATUS FOR PREPARING WRAPPER ELEMENTS OR WRAPPERS

VORRICHTUNG ZUR HERSTELLUNG VON UMHÜLLUNGSELEMENTEN ODER UMHÜLLUNGEN

APPAREIL DE FABRICATION D'ELEMENTS D'EMBALLAGE OU D'EMBALLAGES

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Description

Technical field

[0001] The present invention relates an apparatus for preparing wrapper elements or wrappers, for use preferably in a machine for wrapping a pasty, liquid or semi-liquid food product, and in particular, processed cheese.

Background art

[0002] Prior art machines for wrapping processed cheese portions use a flat sheet of material, normally aluminium foil, which is folded into a shell-like shape to form the lower body of the wrapper which receives the processed cheese product and the top of which is then closed by a cover strip, also made of aluminium foil and appropriately attached to the wrapper body.

[0003] In prior art machines for preparing the sheets so that each is ready to be folded to form the shell-like body of the wrapper, a web of aluminium foil is unwound from a roll and fed with stop-start motion. A cutting unit equipped with a blade having the shape of the wrapper to be made, cuts the individual wrapper sheets from the web. During one of the web stops, a single operation of the cutting unit creates a single wrapping sheet that will subsequently form the wrapper.

[0004] As the wrapping sheet moves forward with stop-start motion, a tear strip and a label are applied to opposite faces of it. In practice, the device that cuts the tear strip from a corresponding reel of material places the tear strip directly on the wrapping sheet during one of steps of the stop-start feed motion in which the wrapping sheet is stopped. Similarly, the device that applies the label to the other side of the wrapping sheet places the label directly on the wrapping sheet during a corresponding stopping step as the sheet moves forward. Feeding the sheet of aluminium foil with stop-start motion in this way, however, results in low working speed.

[0005] From a different viewpoint, another disadvantage of prior art machines is created by the complex procedures required at every changeover to synchronise the feed means of all the wrapper elements. Thus, when the length of the aluminium foil sheet, label and tear strip is changed, all the working parts used to transfer the foil sheets, labels and tear strips from the feed belt to the area where the foil sheets are folded to form the wrapper shells must be accurately re-adjusted.

[0006] Moreover, it must be stressed that the prior art machines of the type described above, in addition to the means for arranging the wrapper sheets, may comprise devices for arranging labels and tear strips, or they may comprise devices for arranging only labels or only tear strips or they may comprise neither of these devices, in which case each wrapper consists of a sheet without either label or tear strip.

[0007] The field therefore feels the need for a machine that can be easily set up according to the different configurations required by users of the machine.

[0008] EP 0601583 discloses the packaging of a packaged product which consists of a wrapping in the form of an outer coil on which a tear strip is attached and which is provided on a strip drum with rows of suction nozzles which are arranged obliquely offset and hold the tear strips, which have been cut off a web by means of cutting tool, and move them into contact with the web of film.

Summary of the invention

[0009] An apparatus for preparing wrapper elements or wrappers, in a machine for wrapping a pasty, liquid or semi-liquid food product, and in particular, processed cheese, comprising means for arranging the wrapper elements, or parts thereof, at least including means for dispensing the wrapper sheets; the apparatus being characterised in that it further comprises wrapper element feeding means between the arranging means and the transport means downstream.

[0010] Thus, separating the operation of the dispensing means upstream from that of the wrapper forming means downstream, thanks to suitable intermediate feeding means, creates an extremely flexible machine structure that can easily be adapted to different user requirements.

[0011] The invention also contemplates the provision of an apparatus comprising means for synchronising the wrappers or wrapper elements which is located upstream of the forming or wrapping zone of the machine.

[0012] This eliminates the need to use more complex systems for adjusting the positions of the wrapper elements of the machine, and hence the need to plan down time for these adjustment operations to be performed.

[0013] The other claims relate to other advantageous aspects of the invention.

Description of the drawings

[0014] The technical characteristics and advantageous aspects of the invention are apparent from the detailed description which follows, with reference to the accompanying drawings, which illustrate a preferred embodiment of the invention provided merely by way of example without restricting the scope of the inventive concept, and in which:

- Figure 1 is a schematic perspective view of a first preferred embodiment of the apparatus according to the present invention;
- Figure 2 is a side view of the first preferred embodiment of the assembly apparatus according to the present invention;
- Figures 3 and 4 are schematic perspective views of each of the longitudinal sides of the label dispensing means;
- Figure 5 is a side view of the device of Figure 3;
- Figure 6 is a side view of a second preferred embod-

iment of the feed apparatus according to the present invention;

- Figures 7 to 11 schematically illustrate the steps in the operation of the feed means at the tear strip dispensing means;
- Figures 11 to 14 schematically illustrate the steps in the operation of the feed means at the wrapper sheet dispensing means;
- Figures 14 to 18 schematically illustrate the steps in the operation of the feed means at the means for sealing the tear strips to the wrapper sheets.

Description of the preferred embodiments of the invention

[0015] Figures 1 and 2 of the accompanying drawings show a first preferred embodiment of the apparatus, according to the present invention, for preparing wrapper elements or wrappers for a pasty, liquid or semi-liquid food product, in particular, processed cheese.

[0016] The apparatus according to the invention is designed in particular for assembling a foldable sheet 12 made of suitable material, for example, aluminium foil, a linearly extending element or strip 14 which is used for tearing the wrapper open and which is laid on one face of the sheet 12, and a label 16, which is applied to the other face of the sheet 12, opposite the face to which the tear strip 14 is applied. The sheet and, if necessary, the tear strip, are then transferred to a forming station where they are folded into a shell-like shape to form a wrapper body suitable for receiving, at the following wrapping machine stations, a portion of pasty product which is then covered over and packaged in appropriate cartons together with other portions of the product.

[0017] This embodiment of the apparatus thus comprises means 18 for dispensing wrapper sheets 12, said means consisting of a first and a second conveyor belt 18 whose surface 20 supports the sheets 12 thanks to its permeable structure or suitable holes connected to suction means for creating a negative pressure, or pressure below atmospheric pressure, in such a way as to hold the sheets 12 to it by suction.

[0018] As illustrated in Figure 1, the means for dispensing the sheets 12 are embodied preferably as first and second conveyor belts 18, 18, designed to feed two parallel rows of sheets 12, 12. As shown, each conveyor belt 18 is trained around respective end rollers 19a, 19b to define a front section 18', which supports and feeds the sheets 12, and a return section 18".

[0019] The apparatus further comprises means 22 for dispensing the tear strips 14. The means for dispensing the tear strips 14 are embodied in first and second conveyor belts 22, 22 whose surface 24 supports the tear strips 14 thanks to its permeable structure or suitable holes connected to means for creating a negative pressure, or pressure below atmospheric pressure, in such a way as to hold the strips 14 to it by suction.

[0020] The first and second conveyor belts 22, 22 are designed to feed a respective row of tear strips 14, 14. As shown, each conveyor belt 22 is trained around respective end rollers 23a, 23b to define a front section 22', which supports and feeds the sheets 12, and a return section 22".

[0021] The apparatus also includes means for dispensing the labels 16, said means comprising a conveyor belt 26 whose surface 28 supports the labels 16 thanks to its permeable structure or suitable holes connected to means for creating a negative pressure, or pressure below atmospheric pressure, in such a way as to hold the labels 16 to it by suction. This conveyor belt 26 is wide enough to feed two parallel rows of labels 16, 16.

[0022] As shown, the label dispensing belt 26 presents a first section 26' for receiving and feeding the labels 16 towards feeding and assembling means 30, and a return section 26"'. As illustrated, the conveyor belt 26 is trained around respective end rollers 27a, 27b to define a section for receiving the labels 16 and a section for feeding and transferring them. Advantageously, the wrapper element feed means 30 are designed to sequentially receive and feed the tear strips 14 and the flat wrapper sheets 12 from the tear strip dispensing means 22 and the sheet dispensing means 26, in such a way that the elements remain centred, while following a circumferential path, relative to a defined centre line C of the receiving seat 32.

[0023] Further, as illustrated, the sheet dispensing means 18 present a respective end 18a extending in the proximity of the feed and assembling means 30 and an end 18b for receiving the sheets 12.

[0024] As illustrated in Figure 1, each sheet receiving seat 32 presents a midpoint, relative to the circumferential feed direction, at which the centre or middle reference point of the corresponding sheet length is placed. The midpoints or centre lines C of the seats are located at equal intervals or distances P from each other in the direction in which the seats themselves move. Thus, the centre line C of each seat 32 is equidistant from those of the seats adjacent to it by a length or distance P. It follows that sheets corresponding to large size wrappers will be positioned over the seats 32 with their transversal edges extending symmetrically beyond the lines where the transversal edges of sheets corresponding to smaller size wrappers would lie.

[0025] For centring the sheets corresponding to each wrapper size in this way, it is sufficient to act on the dispensing means either by adjusting them or by providing them with suitable means for retaining and dragging the sheets on the conveyor 20, releasing them at a suitable point, in such manner as to increase the distance "d" between the sheets for smaller size wrappers. As illustrated, the feed means are preferably revolving means, embodied as a revolving wheel 30, having a surface 32 that supports the tear strips 14 and the sheets 12 thanks to its permeable structure or suitable holes connected to means for creating a negative pressure, or pressure below atmospheric pressure, in such a way as to hold the sheets 12 to it by suction.

[0026] The means 22 for dispensing the tear strips 14 also present a respective end 22a extending in the proximity of the feed and assembling means 30 at a receiving point which, in the direction of motion of the assembling means 30, is located upstream of the point where the sheets 12 are dispensed. Thus, each sheet 12 is placed on the assembling means 30 on top of the corresponding tear strip 14.

[0027] Similarly, the means 26 for dispensing the labels 16 present a respective end 26a extending in the proximity of the feed means 30 at a point downstream of the point where the sheets 12 are received.

[0028] Advantageously, the retaining surface 32 of the feed means 30 moves continuously at a predetermined tangential speed V0. In practice, the wheel 30 revolves at a constant angular speed such that the upper surface of each tear strip moves at a speed equal to V0.

[0029] Also the means 22 for dispensing the tear strips 14, the means 18 for dispensing the sheets 12 and the means 26 for dispensing the labels 16 move at a predetermined speed corresponding to the speed **V0** of the feed and assembling means 30 so that the tear strips 14, the sheets 12 and the labels 16, respectively, reach the point where they are transferred to the feed and assembling means 30 in synchronised fashion as the respective sheets 12, tear strips 14 and labels 16 are passing by. At the moment of transfer, the suction which is holding the sheets 12, tear strips 14 and labels 16 against the respective retaining surfaces of the corresponding dispensing means is switched off.

[0030] As mentioned above, when changing over to a different wrapper size, the longitudinal spacing between successive tear strips 12, 12 on the dispensing means 18 must be changed accordingly. For changing the spacing, suitable means are provided, upstream of the sheet dispensing means 18, which suitably space the sheets so they are dispensed over the tear strips 18, 18 in such a way that they are centred on the receiving zone of the feed and assembling means 30, described in more detail below. The dispensing points where the feed means 30 receive the tear strips 14 and the sheets 12 are spaced in such a way that each sheet 12 is associated with a corresponding tear strip 14.

[0031] The dispensing point of the labels 16 is located, relative to the direction of motion of the feed and assembling means 30, downstream of the dispensing point of the sheets 12 at a distance such that each label 16 is associated with the corresponding sheet 12.

[0032] Each label 16 is placed over the corresponding sheet 12, which is already on a tear strip 14, coming to rest and being fixed to the face opposite the face that is in contact with the retaining surface 32 of the assembling means 30 and that is on top of the corresponding tear strip 14.

[0033] The invention also contemplates the provision of means 34 for transferring the assembled wrappers 17 to a unit 35 for forming or folding the wrappers.

[0034] These transfer means 34 receive the wrappers which have been assembled in the assembling means and feed them at a predetermined speed **V0** equal to the speed at which they are fed by the wrapper forming or folding unit 33.

[0035] As illustrated, the means for transferring the assembled wrappers comprise at least one conveyor belt 34 whose lower surface 36 retains the assembled wrappers 17 thanks to its permeable structure or suitable holes connected to means for creating a negative pressure, or pressure below atmospheric pressure, in such a way that the assembled wrappers 17 are held to the retaining surface 36 by suction. As illustrated, the means 34 for transferring the assembled wrappers 17 are designed to feed the assembled wrappers 17 in a first and a second parallel rows.

[0036] The assembled wrapper transfer means 34 have a section 34' that receives and feeds the assembled wrappers 17 to the forming unit 33 to which it transfers each assembled wrapper 17 - from above - by switching off the retaining suction when the wrapper 17 reaches the forming unit 33 and the latter is ready to receive it.

[0037] The conveyor belt 34 is trained around respective end rollers 35a, 35b to define the section 34' for receiving and feeding the labels 16, and a return section 34".

[0038] Means which are not illustrated in the accompanying drawings are provided for adjusting the predetermined speed **V0** of the assembling means 30 and of the means 18, 22, 26 for dispensing the wrapper elements. The predetermined tangential feed speed **V0** of the assembling means is normally constant and equal to the feed speed of the unit 33 for folding the wrappers 33.

[0039] Further, for enabling the passage of the assembled wrappers 17 from the assembling means 30 to the transfer means 34, means 26" are provided.

[0040] The means for passing the assembled wrappers 17 are advantageously defined by a section 26" of the label 16 dispensing conveyor belt 26 downstream of the section 26' that receives and feeds the labels 16 to the assembling means 30.

[0041] As illustrated, the section 26" for passing the assembled wrappers 17 is trained around the roller 27b and a third roller 27c so as to form a conveyor belt that follows a triangular path. The section 26" for passing the assembled wrappers 17 receives the latter, from above, from the feed and assembling wheel 30 at a point substantially coinciding with the point at which the labels 16 pass.

[0042] In practice, the labels 16 are pressed and glued to the wrapper sheets 12. Immediately after this, the retaining suction on the wheel 30 is switched off and the assembled wrappers 17 are passed to the section 26" of the conveyor belt 26, which holds the assembled wrappers 17 to its upper retaining surface by suction and then passes them on to the transfer means 34 by switching off the suction.

[0043] Figures 1 and 2 also show means, denoted in their entirety by the reference numeral 38, for cutting the

tear strips 14 from tapes, labelled 15, of tear strip 14 material unwound from a reel 15' and from a reel 15" for each tear strip. These tear strip 14 cutting means are designed to place the tear strips 14 on the dispensing means 22 at the end of the latter opposite the end where the tear strips 14 are transferred to the assembling means 30.

[0044] The means 38 for cutting the tear strips 14 are advantageously positioned between the means 22 for dispensing the tear strips and the means 34 for transferring the assembled wrappers 17, thus reducing the overall size of the apparatus.

[0045] The cutting means consist, for each conveyor belt 22, of a suitably shaped blade (not illustrated in the accompanying drawings) driven towards the corresponding belt 22 in such manner as to cut the tear strip 14 and then away from the belt 22 to enable the latter to continue moving forward. The tear strip dispensing means 22 are driven at a speed such that the tear strips move at the same speed as the assembling means 30 and can be transferred to the assembling means 30, drive being intermittent so that the belt stops when the tear strips 14 are received from the cutting means 38.

[0046] Once the tear strips 14 have been cut, the conveyor belt 22 is accelerated to rapidly reach the speed at which the tear strips 14 are delivered to the assembling wheel 30. After delivering the tear strips to the wheel 30, the conveyor belt 22 is decelerated and rapidly stopped to enable other tear strips to be cut.

[0047] In the event of a wrapper size changeover, the tear strip cutting means are shifted lengthways along the corresponding belt 22 so as to adjust the longitudinal spacing between successive tear strip 14, 14.

[0048] The apparatus according to the invention may comprise suitable means for cutting the sheets 12 from a web of material for wrapper sheets 12. These means are not illustrated in the accompanying drawings and may have the form defined in Italian patent application No. BO2000A00037 in the name of the same applicant as the present.

[0049] Means 40 are also provided for sealing the tear strips 14 to respective sheets 12. Advantageously, the means for sealing the tear strips 14 to respective sheets 12 take the form of a revolving heating roller 40 that is kept in contact with the surface of the feed and assembling means 30 that retains the tear strips 14 and the sheets 12 in such manner as to heat the sheets 12 placed over the respective tear strips 14. In this manner, continuous sealing of the tear strips 14 to the sheets 12 is achieved.

[0050] For sealing the tear strips, the sealing means 40 are designed to contact each sheet 12 at a point which, in the direction of motion of the tear strip 14 assembling means 30, is located downstream of the points where the tear strips 14 and the sheets 12 are dispensed. The provision of suitable means for feeding and assembling the wrapper elements, which receive sequentially the various preformed elements of the wrapper and whose feed motion is continuous or substantially continuous, makes it possible to achieve machine operating speeds that are on average higher than the speeds attained by prior art feed devices with stop/start motion. Machine productivity, in terms of number of wrappers made per unit time is appreciably greater than that of prior art feed devices with stop/start motion.

[0051] The apparatus according to the invention further comprises means for applying glue to the labels 16. The glue application means comprise two elements 42, 42 for applying glue to corresponding labels 16, 16. These elements are longitudinally spaced in the label feed direction, and the speeds at which the labels 16 are fed by the label 16 dispensing means and at which the application elements rotate are such that two longitudinally successive labels are fed to each glue application element 42.

[0052] As illustrated, these means comprise a pair of glue application devices 41, 41 designed to apply spots of glue to respective rows of labels 16, 16. The glue application means 42 apply three spots of glue to each label. In the present embodiment, the label is triangular in shape and is designed to be glued to the bottom of a processed cheese wrapper which, when completed, has the shape of a solid with a substantially triangular base.

[0053] As shown in particular in Figure 2, the glue application means comprise a glue application device 41 with a glue application element 42 having means 44 for dispensing the glue to the label 16 and means for driving the glue dispensing means 44', 44" designed to make the glue dispensing means 44', 44" follow a glue dispensing path parallel to and at the same speed as the path followed by the means 26 for feeding the labels 16 in the section where the glue is applied to them.

[0054] As illustrated, the glue dispensing means in this particular embodiment are glue emitting nozzles 44', 49" connected by respective conduits 45 to a glue tank 47.

[0055] More specifically, each glue application element has a single nozzle 44' at the front and a pair of nozzles 44" at the back - only one of which is shown in Figure 20 - each of which puts a spot of glue on the blank face of the label 16 to be applied to wrapper sheet.

[0056] The means for driving the glue dispensing means comprise a plate 46 for mounting the glue dispensing means 44', 44". The drive means move the plate 46 along a closed path having one section parallel to the label 16 feed belt. The plate is carried by belts 48 carried on a first toothed wheel 50 and a second toothed wheel 52, longitudinally spaced from each other and equidistant from the label 16 feed belt 26.

[0057] Two pairs of these wheels 50, 52 drive respective belts 48 along a forward section and return section, enabling the mounting plate 46 to be kept parallel to the label 16 dispensing means. The first and second elements 42, 42 are carried by the same mounting plate 46 that moves along a closed path.

[0058] The glue application elements 42, 42 are lon-

gitudinally spaced in the label feed direction, and the speeds at which the labels 16 are fed by the label 16 dispensing means and at which the application elements 42, 42 rotate are such that two longitudinally successive labels are fed to each glue application element 42.

[0059] This glue application system has a simple structure and low cost. This glue application system is also easy to inspect. The apparatus according to the invention also comprises means for transferring the labels 16 to the means for dispensing the labels 16.

[0060] These transfer means comprise means for housing a plurality of labels 16 which, as can be seen in Figure 1, include first and second tubes for housing the labels 16, the tubes being arranged in pairs in such.a way as to feed corresponding rows of labels 16, 16. In Figure 2, the housing tubes are labelled 54. Figure 2 shows only one of each of the pairs of tubes 54.

[0061] As illustrated, the label 16 housing means advantageously comprise a plurality of pairs of tubes 54, longitudinally spaced in the direction, in which the labels 16 are fed by the dispensing means 26. Each pair of tubes is designed to feed corresponding labels 16.

[0062] It is thus possible either to feed different types of labels for different types of cheese or other pasty product to be wrapped or to create a larger, longer-lasting supply of labels in the label reservoir.

[0063] The labels 16 are stacked inside the tubes 54 which have an open lower end 54a designed to feed the labels 16 out one at a time. Means 56 are provided for picking up the labels 16 from the respective pair of label housing tubes and transferring them to the means 26 that dispense the labels 16.

[0064] Figures 3, 4 5 schematically show that the pick-up and transfer means 56 of the labels 16 comprise means for gripping the labels 16 which, for each label tube, comprise a label 16 gripper element 58 having an end surface 59 for supporting and retaining a respective label 16 and drive means for moving the gripping means between a position where a label is picked up from the housing means 54 and a position where the label is transferred to the dispensing means 26.

[0065] More specifically, these label pickup and transfer means constitute means, as described in more detail below, for transferring the labels to continuously moving means.

[0066] As can be seen also with reference to Figure 5, the retaining surface 59 features suitable holes FE (or otherwise it is a surface permeable to air) connected to means for creating a negative pressure, or pressure below atmospheric pressure on the surface 59, in such a way as to hold the labels 16 to it by suction. The means for driving the gripping means consist of a revolving disk 60 positioned at a level substantially ranging in height from the label outfeed end 54a of the housing means 54 to the dispensing means or conveyor 26 of the labels 16.

[0067] The disk 60 mounts the means 58 for gripping the labels 16. As illustrated in Figure 3, the label gripping element 58 takes the form of an L-shaped body connected at 58a to the label transfer disk 60 that supports and transports it. The label gripper element 58 comprises a portion 58b, which connects it to the revolving means 60, and a portion 58c, which is attached to the portion 58b and which defines the label pickup surface 59 with the holes FE connected to the suction conduits constituting the means for retaining the label E.

[0068] As illustrated, the portion 58c projects outwards in a direction transversal to the supporting portion 58b. Further, the L-shaped body 58 for gripping and supporting the labels is pivoted at 58a to the drive disk or means 60.

[0069] Means 62 are provided for moving the label 16 gripping element 58 between an outside extended radial position and an inside retracted radial position.

[0070] The outside extended position of the gripping means 62 is created when the means 58 are moved to the label reservoir 54 and to the label feed belt 26 to define, respectively, a position of picking up and a position of transferring a label.

[0071] The drawings show only the position where the label is transferred to the conveyor belt 26.

[0072] During their movement from the label reservoir 54 to the conveyor belt 26, the label gripping means 58 are kept in the retracted position which enables the label to be held more securely. The label gripping means 58 are also kept in the retracted position during their movement from the conveyor belt 26 to the label reservoir 54 after the label has been released onto the belt 26.

[0073] The outside extended position of the means 58 when they reach the reservoir 54 enables them to pass the edge 54'a of the reservoir so that the retaining surface 59 is close to the lower edge 54'a of the reservoir 54 and the lowermost label in the reservoir 54 can be extracted by the suction through the label supporting surface 59.

[0074] Once the end surface 59 of the element 58 has been positioned between the walls of the label reservoir 54 causing the end to protrude from the reservoir 54 and enabling the next edge 54"a of the lower edge of the reservoir to be past, the label gripping element 58 is radially retracted. For transferring the label to the conveyor belt 26, the element 58 is moved outwards so as to impinge on the belt 26. The means for moving the gripping element between an extended position and a retracted position comprise a cam profile 62 that acts in conjunction with a corresponding portion 64 of an L-shaped drive lever 63, in this particular embodiment, a roller 64, pivoted at 64' to the L-shaped lever 63 at the end 63b of the latter. The drive lever 63 is pivoted to and supported by the transfer disk 60 at 63a at the bend in the L-shaped lever body 63 and has another portion 63c with a curved rack 65 on the end of it which is designed to mesh with the teeth 67' of a pinion 67 attached to the supporting portion 58b of the label pickup portion 58c, in such manner that rotation of the lever 63 caused by the cam 62 imparts rotational motion about the pin 58a on the element 58 and radial motion on the label pickup surface 59.

[0075] The connecting means created by the rack 65

and the pinion 67 define a gear ratio that can be appropriately chosen so that small radial movements of the cam follower roller 64 on the cam 62 cause a desired large radial movement of the label pickup surface 59. Thus, the overall dimensions of the device are advantageously limited.

[0076] Means are provided for moving the cam 62 between an outside extended radial position and an inside radial position.

[0077] The means for moving the cam 62 between an outside extended radial position and an inside transfer position take the form of a crank 66 connected by a link 68 to the base 62' which bears the cam 62 and which is coaxially housed in a circular opening made in the disk 60, thus creating a structure of limited width.

[0078] In practice, in a first working condition, where a label is extracted from the label reservoir, the disk 60 is stationary and the pickup element 58, with suction on, is positioned at the label 16 housing tube 54 and sucks the label 16 out of the tube.

[0079] Starting from this position, the crank 66 rotates and, through the arm 68, imparts rotation on the cam 62, whose profile forms a radial protrusion that causes the pickup element 58 to retract radially by rotating about the connecting pin 58a pivoted to the disk 60. At this point, the disk 60 turns by 180° dragging the pickup element 58 along with it, thus carrying the label 16 to the position shown in Figure 3. During this step, the cam 62 remains in substantially the same position relative to the disk 60, that is to say, it rotates with the disk so that the label pickup element 58 remains in the retracted condition.

[0080] When the label pickup element 58 reaches the conveyor belt 26 below it, and while the disk 60 continues to rotate, the cam 62 pushes the pickup element 58 outwards and imparts on the end surface 59, which is carrying the label, a speed corresponding to the speed of the conveyor belt 26, thus enabling a "running" transfer of the label, that is to say, enabling the label to be released by the pickup surface 59 onto the dispensing belt 26 while the belt 26 is in motion. The label is dropped by switching off the suction at the end surface 59 of the label pickup element 58.

[0081] Next, by an opposite movement to the pickup movement, the cam 62 is rotated in such a way as to cause the end surface 59 of the element 58 to retract, and the disk 60 turns by 180°, taking the pickup element 58, now without a label on it, back to the label reservoir 54.

[0082] During this step, the cam 62 remains in substantially the same position relative to the disk 60, that is to say, it rotates with the disk so that the label pickup element 58 remains in the retracted condition. At this point, the cam 62 rotates while the disk 60 remains stationary, thus enabling the pickup element to be inserted into the label reservoir tube 54 to extract another label 16.

[0083] The label arranging means described above place the labels at regular intervals, that is to say, with predetermined spacing, so that the distance between the ideal centres or reference points of the labels (corresponding to the spacing), which corresponds to the ideal centre distance or spacing of the wrapper sheets in the sheet dispensing area on the assembling means, is always the same, whatever the size of the wrappers. This means that the system can handle labels of different sizes, for different wrapper lengths, the labels always being in a centred position when they reach the area where they are dispensed to the assembling means 30.

[0084] The next set of drawings illustrate another embodiment of the apparatus for preparing wrapper elements or wrappers, for use preferably in a machine for wrapping a pasty, liquid or semi-liquid food product, and in particular, processed cheese.

[0085] This second embodiment of the apparatus according to the invention comprises means for arranging the wrapper elements, or parts thereof,, including means 122 for dispensing, in particular, tear strips, that is, elements used to tear the wrappers open, said means consisting of cutting means comprising first and second cutting elements 122, 122, which place a first and a second part of the tear strip simultaneously on two consecutive seats 132 of the wrapper feed means, as described in more detail below.

[0086] The cutting elements 122, 122 are positioned one after the other and are angularly spaced in the feed direction A.

[0087] The cutting means take the form of a blade 138 designed to cut the tear strip from a tape 115 of suitable material.

[0088] Means 139 are also provided for driving the cutting means 138, in alternating fashion, between a retracted position where the tear strip material is fed to the cutting means 138, and a forward position where the tear strip is cut and transferred to the feed means of this embodiment.

[0089] More specifically, the cutter blade drive means comprise a stem 139' which bears the cutting blade 138 on the end of it.

[0090] The tape of tear strip material is unwound from a reel 115'.

[0091] In this embodiment, the cutting elements are of the same type and are used to cut identical tear strips. In simple terms, the cutting elements are suitably oriented relative to the respective base, that is to say, in a direction substantially opposite the direction in which the wrapper elements are fed, in such manner that the tear strips placed on the seats 132 are arranged according to an X or Y-shaped configuration.

[0092] Downstream of these tear strip dispensing means, there are means for dispensing wrapper sheets, said means comprising a revolving roller 118, with suction holes or grooves 118', which feeds the wrapper sheets with continuous or substantially continuous motion.

[0093] More specifically, the dispensing means or roller 118 preferably moves at a constant or substantially constant angular speed.

[0094] These wrapper sheet dispensing means make

it possible to attain high operating speeds.

[0095] The web 112' of wrapper material, normally aluminium foil, slides over the roller. The individual wrapper sheets, after being laterally shaped are cut transversely from the web.

[0096] Downstream of the sheet dispensing means, there are sealing means 140 designed to seal the wrapper sheets to the tear strips and consisting of a plate 140 with a fixed heated contact surface 141.

[0097] Alternatively, a sealing plate that remains in contact with the wrapper elements to be sealed while moving along with them for a certain length in the direction of feed might also be contemplated.

[0098] Downstream of the sealing means, there are means for dispensing labels which comprise means for feeding the labels consisting of a conveyor belt 126 driven continuously or substantially continuously at a constant speed so that high operating speeds can be attained.

[0099] As illustrated, the conveyor belt 126 has an inclined section 126' that makes an angle B with the vertical. This limits the overall dimensions of the apparatus and creates means for assembling the label to the wrapper sheet at an end area 126a of the inclined section of the label feed belt.

[0100] Thus, the label is received on a section 126b located upstream of the assembly point and being provided, at an area 126c following the label positioning area between the point where the label is received and the assembling point where it is applied, with adhesive used for gluing the label to the bottom of the wrapper sheet. The label is picked up from a reservoir 154 and placed on the conveyor belt 126 at predetermined intervals by suitable means such as those of the embodiment described above.

[0101] This creates a simple structure and, more specifically, makes it possible to reduce the length of the wrapping machine.

[0102] Further, the label feed means also constitute means for transferring the wrapper element to the means 134 that convey it to the wrapper forming, filling and sealing means of the processed cheese wrapping machine through a short, upper horizontal section 126d located downstream of the inclined section where the wrapper element is received.

[0103] According to another aspect of it, between the means for preparing the wrappers and the downstream conveyor means 134, the present invention contemplates the provision of means 130 for feeding the wrapper element and comprising a plurality of receiving seats 132 located at intervals of predetermined length P.

[0104] Thanks to these intermediate feed means, the wrapper elements can be positioned at predetermined intervals from each other upstream of the wrapper forming area, whatever the size of the wrappers. Thus, when changing over to a new size in a machine equipped with the apparatus according to the invention, it is not necessary to re-adjust all the wrapping parts, as is the case with prior art machines where practically all the working parts must be adjusted and re-timed.

[0105] This means that, compared to prior art machines, changeover down time is eliminated. According to yet another aspect, the apparatus according to the invention constitute feed means for synchronising the wrappers or wrapper elements upstream of the forming or wrapping zone of the machine.

[0106] Advantageously, the working motion of the feed means 130 is continuous or substantially continuous, thus making it possible to attain higher working speeds than those possible in prior art.

[0107] The feed means according to the invention comprise means 132 for supporting the wrapper element and/or a part of it and consisting of a plate with a surface 132a that supports the wrapper or wrapper element and that is equipped with suitable retaining means consisting of suction means designed to hold the wrappers or wrapper elements to the supporting surface 132a.

[0108] Advantageously, the means 132 for supporting the wrappers or wrapper elements are moved by feed means 133 consisting of a revolving wheel 133 that moves continuously or substantially continuously at a constant speed. This wheel configuration minimises the space occupied by the apparatus in the wrapping machine.

[0109] Means are also advantageously provided for moving the supporting means relative to the means 138, 118, 140, 126 for arranging the wrapper or wrapper element, in such manner as to perform a corresponding operation on the wrapper or wrapper element.

[0110] The means for moving the supporting means move, in particular relative to the feed means 133, between a retracted position, illustrated, for example in Figures 7 and 11, which show a step before the tear strip is received up and a step after the tear strip is received by the supporting surface 132, and an extended working position illustrated, for example in Figures 8, 9 and 10, where the wrappers or wrapper elements are carried to a working end of the arranging means.

[0111] In practice, in a first advantageous working condition, the means for moving the means for supporting the wrappers or wrapper elements are designed to keep the supporting means in a condition such that they are stationary relative to the working means "outside" the feed means, whilst the feed means 133 themselves impart on the supporting means 132 a continuous motion at constant angular speed. This means that the required operation can be performed in the optimum manner without interrupting the feed motion, thus making it possible to attain high working speeds.

[0112] More specifically, as illustrated in Figures 8 to 10, the means for moving the supporting surface 132 are designed to keep the supporting surface in a condition such that it is stationary relative to the tear strip dispensing means 138 at a certain distance from the transfer end of the tear strip dispensing means whilst the feed means 133 carry on moving. This eliminates the need for intermediate means between the tear strip cutting means and

the tear strip receiving means.

[0113] The means for moving the means for supporting the wrappers or wrapper elements are designed to rotate the supporting means, as illustrated schematically in Figures 12 to 14, in contact with a corresponding working surface of the revolving means 118 for dispensing the wrapper sheets so that the wrapper sheets are picked up continuously from the dispensing means while the feed means 133 carry on moving with continuous motion at a constant or substantially constant angular speed. Thus, the part facing the supporting means 132 is contacted in the optimum manner.

[0114] The means for moving the means for supporting the wrappers or wrapper elements are designed to keep the supporting means 132, as illustrated schematically in Figures 15 to 18, in a condition such that they are stationary and in contact with means 140 for sealing the tear strips to the wrapper sheets, while the feed means 133 carry on moving with continuous motion at a constant or substantially constant angular speed. Thus, the sealing surface is always the same size and can be heated more efficiently, with a lower power requirement to reach the optimum temperature for sealing.

[0115] According to yet another aspect, the means for moving the means for supporting the wrappers or wrapper elements are designed to keep the supporting means 132 in a condition such that they are parallel to a corresponding surface of the label feed means 126, the surface of the supporting plate of the supporting means following the same linear movement as the label feed belt. All this is carried out while the feed means 133 impart on the supporting means 132 a continuous motion at constant angular speed.

[0116] During this step of transferring the assembled wrappers, the suction that holds the wrappers to the supporting means is switched off so that the wrapper sheets can be released and transferred to the conveyor means that carry them downstream towards the forming area where the wrapper is completed.

[0117] As illustrated, the means for moving the supporting means, comprise a first supporting arm 135 and a second supporting arm 137 which are linked in articulated fashion at the ends 135a, 137a to the means 132 for supporting the wrapper element and at the other ends 135b, 137a to the feed means 133 in such a way that the supporting means 132 move in parallel with the feed means so that they can receive a wrapper or wrapper element from the feed means in a suitable manner.

[0118] The invention also contemplates the provision of means, which are not illustrated in the accompanying drawings, for rotationally driving the arms 135, 137 in such a way as to keep the supporting means near the feed means for a sufficient length of time to receive the wrapper element.

[0119] The means for linking the feed means comprise means for driving the articulation pins 135c, 137c of the supporting arms 135, 137, said drive means being defined by a first linkage consisting of a lever 139 and a second linkage consisting of a circular plate 141 rotatably retained within a respective circular seat 141 in the feed means 133.

[0120] At their ends 139a, 141a, these drive means support the articulation pin of the respective supporting arm and, at their other ends 139b, 141b, are joined to a shared articulation pin 143 fixed to the feed means 133.

[0121] Means which are not illustrated in the accompanying drawings are provided for driving the first and second linkages or drive means between a position in which the arms are in the conveying condition and a position in which the arms are in the pickup condition.

[0122] In practice, driving both linkages in opposite angular directions adjusts the radial position of the wrapper or wrapper element relative to the arranging element, driving one or both linkages in the same angular direction through a suitable angle suitably variable over time causes the supporting plate to rotate, and appropriately combining the movements of the linkages and of the wrapper element holding arms creates the desired operations described above.

[0123] Thus, the structure of the drive means is such that the wrapper element holding means can perform all the movements required for each operation.

[0124] As illustrated, the feed means according to the invention constitute advantageous means for assembling and synchronising the wrapper elements with each other.

[0125] Thus, the machine can be easily adapted to different types of wrappers: for example, wrappers with or without tear strip, without requiring significant changes to machine structure.

[0126] In the apparatus according to the invention, the provision of suitable means for feeding the wrapper, which sequentially receive the wrapper sheets and place them in suitably spaced seats, and where the motion of the feed means is continuous or substantially continuous, makes it possible to makes it possible to achieve machine operating speeds that are on average greater than the speeds attained by prior art feed devices with stop/start motion. Machine productivity, in terms of number of wrappers made per unit time is appreciably greater than that of prior art feed devices with stop/start motion.

[0127] In the apparatus according to the invention, the provision of suitable feeding and assembling means having seats for sequentially receiving the wrapper elements, which are suitably spaced at predetermined intervals and where the wrapper elements are centrally positioned permits the creation of wrappers which, whatever their size, are always in the correct feed and working position for the machine units downstream but without requiring the use of complex systems for adjusting the relative positions of the machine units.

[0128] The other claims define other advantageous aspects of the invention.

[0129] It will be understood that the invention can be adapted and varied in several ways without thereby departing from the scope of the inventive concept. Moreo-

ver, all the details of the invention may be substituted by technically equivalent elements.

Claims

1. An apparatus for preparing wrapper elements or wrappers (17), in a machine for wrapping a pasty, liquid or semi-liquid food product, and in particular, processed cheese, comprising means for arranging the wrapper elements, or parts thereof, at least including means (18) for dispensing the wrapper sheets designed to feed a row of sheets (12), means (22) for dispensing the tear strips, and means (30, 130) for assembling the flat wrapper sheets (12), received from the respective wrapper sheet dispensing means (18), with the tear strips (14), received from the respective tear strips dispensing means, the apparatus being **characterised in that** it comprises means (26) for dispensing labels (16, 126) to be assembled on the means (30, 130) for assembling the flat wrapper sheets with the tear strips; **in that** the means (30, 130) for assembling the flat wrapper sheets (12), the tear strips (14) and the label take the form of a revolving wheel (30) comprising a plurality of seats (32) for sequentially receiving the tear strips (14), the wrapper sheets (12) on the tear strips (14) and the labels on the wrapper sheets (12), in which each label (16) can be placed over the corresponding sheet (12), which is already on a tear strip (14), coming to rest and being fixed to the face of the wrapper sheet (12) opposite the face that is in contact with the retaining surface (32) of the assembling means (30) and that is on top of the corresponding tear strip (14).

2. The apparatus according to claim 1 **characterised in that** it comprises, upstream of the wrapper forming zone of the machine, means for synchronising the wrappers or wrappers elements.

3. The apparatus according to any of the foregoing claims, **characterised in that** the motion of the feed means (30, 130) is continuous or substantially continuous.

4. The apparatus according to any of the foregoing claims, **characterised in that** the feed means (130) comprise means (132) for supporting the wrapper or wrapper element and consisting of a plate with a supporting surface (132a) for retaining the wrapper or wrapper element.

5. The apparatus according to claim 4, **characterised in that** the means for supporting the wrappers or wrapper elements comprise a plurality of seats (32) for sequentially receiving wrapper elements, spaced at intervals of predetermined lengths (P) and on which the wrapper elements are centrally placed.

6. The apparatus according to any of the foregoing claims, **characterised in that** the supporting means (132) comprise suction retaining means for holding the wrappers or wrapper elements to the supporting surface (132a).

7. The apparatus according to any of the foregoing claims, **characterised in that** the supporting wheel revolves with continuous or substantially continuous motion.

8. The apparatus according to any of the foregoing claims, **characterised in that** the feed means (30) take the form of a revolving wheel (30) having means (32) for supporting the wrapper, sheets (12) to which the labels (16) are applied.

9. The apparatus according to any of the foregoing claims, **characterised in that** the feed means (30, 130) move in a vertical plane.

10. The apparatus according to any of the foregoing claims, **characterised in that** it comprises means for moving the supporting means relative to the means (138, 118, 140, 126) for arranging the wrapper or wrapper element, in such manner as to perform a corresponding operation on the wrapper or wrapper element.

11. The apparatus according to any of the foregoing claims, **characterised in that** it comprises means for moving the supporting means relative to the feed means (133) between a conveying position and a working position.

12. The apparatus according to any of the foregoing claims, **characterised in that** the means for supporting the wrappers or wrapper elements are designed to keep the supporting means in a stationary condition while the feed means (133) feed the supporting means (132).

13. The apparatus according to claim 12, **characterised in that** the means for moving the supporting surface that retains the wrappers or wrapper elements are designed to keep the supporting surface in a condition such that it is stationary relative to the tear strip dispensing means (138) at a certain distance from the transfer end of the tear strip dispensing means themselves.

14. The apparatus according to any of the foregoing claims, **characterised in that** the means for moving the wrapper or wrapper element supporting means are designed to keep the supporting means (132) in contact with means (140) for sealing the tear strips

to the wrapper sheets.

15. The apparatus according to any of the foregoing claims, **characterised in that** the means for moving the wrapper or wrapper element supporting means are designed to rotate the supporting means in a stationary on a corresponding working surface as the feed means (133) move.

16. The apparatus according to claim 15, **characterised in that** the means for moving the wrapper or wrapper element supporting means are designed to rotate the supporting means in a stationary on a corresponding working surface of the revolving dispensing means (118) in order to pick up the wrapper sheets from the dispensing means.

17. The apparatus according to any of the foregoing claims, **characterised in that** the means for moving the wrapper or wrapper element supporting means are designed to keep the supporting means in a condition such that, as the feed means (133) move, the supporting means (132) are parallel to a corresponding surface that is moving in a linear direction.

18. The apparatus according to any of the foregoing claims, **characterised in that** the means for moving the wrapper or wrapper element supporting means are designed to keep the supporting means (132) in a condition such that they are parallel to a corresponding surface of the label feed means (126), the surface of the supporting that retains the wrapper element moving together with the label feed means and with the same linear motion as the label feed means.

19. The apparatus according to any of the foregoing claims, **characterised in that** the means for moving the supporting means comprise a first supporting arm (135) and a second supporting arm (137) which are linked in articulated fashion to the means (132) for supporting the wrapper element and to the feed means (133).

20. The apparatus according to claim 19, **characterised in that** it comprises means for rotationally driving the arms (135, 137).

21. The apparatus according to any of the foregoing claims, **characterised in that** the means for linking the feed means comprise means for driving the articulation pins (135c, 137c) of the supporting arms (135, 137) on the feed means.

22. The apparatus according to claim 21, **characterised in that** the means for driving the pins are defined by first and second linkages.

23. The apparatus according to claim 22, **characterised in that** the first linkage takes the form of an articulated lever (139).

24. The apparatus according to claim 22 or 23, **characterised in that** the second linkage takes the form of a circular plate (141) rotatably retained within a respective circular seat (141) in the feed means (133).

25. The apparatus according to any of the foregoing claims from 22 to 24, **characterised in that**, at their ends (139a, 191a), the means for driving the arms that support the wrappers retaining surface support the articulation pin of the respective supporting arm and, at their other ends (139b, 141b), are joined to a shared articulation pin (143) fixed to the feed means (133),

26. The apparatus according to any of the foregoing claims from 22 to 25, **characterised in that** it comprises means for driving the first and second linkages or drive means between a position in which the arms are in the conveying condition and a position in which the arms are in the pickup condition.

27. The apparatus according to any of the foregoing claims **characterised in that** it comprises means (122) for dispensing the tear strips, taking the form of first and second cutting elements (12, 122) spaced in the direction of feed (A).

28. The apparatus according to any of the foregoing claims **characterised in that** the means (22) for dispensing the tear strips present a respective end (22a) extending on the feed means (30) at a receiving point which, in the direction of motion of the feed means (30), is located downstream of the point where the tear strips (14) are received, and upstream of the point where the sheets (12) are dispensed, so that each sheet (12) is placed on the feed means (30) on top of the corresponding tear strip (14).

29. The apparatus according to any of the foregoing claims **characterised in that** the wrapper sheet dispensing means comprise a revolving roller (118).

30. The apparatus according to any of the foregoing claims, **characterised in that** it comprises means (38) for cutting the tear strips (14) from a tape (15) of material for tear strips (14), said tear strip (14) cutting means being designed to cut the tear strips (14) from a tape and place them on the means (22) for dispensing the tear strips (14).

31. The apparatus according to claim 30, **characterised in that** the tear strip dispensing means (22) are driven at a speed such that the tear strips move at the same speed as the feed means (30) and can be

transferred to the feed means (30), drive being intermittent so that the dispensing means stop when the tear strips (14) are received from the cutting means (38).

32. The apparatus according to any of the foregoing claims, **characterised in that** it comprises means for continuously sealing the tear strips (14) to the wrapper sheets (14).

33. The apparatus according to claim 32, **characterised in that** the means for sealing the tear strips (14) to the wrapper sheets (12) take the form of a revolving heating roller (40) that is kept in contact with the surface that retains the tear strips (14) and the sheets (12) in such manner as to heat the sheets (12) placed over the respective tear strips (14).

34. The apparatus according to any of the foregoing claims **characterised in that** it comprises means (140) for sealing the wrapper sheets to the tear strips and taking the form of a plate (140) with a contact surface (141).

35. The apparatus according to any of the foregoing claims **characterised in that** it comprises means (140) for sealing the wrapper sheets to the tear strips and having a sealing surface (141) that extends in an inclined direction that makes a predetermined angle (A) with a direction tangential to the feed direction.

36. The apparatus according to any of the foregoing claims **characterised in that** it comprises means for feeding the wrapper sheets whose motion is continuous or substantially continuous.

37. The apparatus according to any of the foregoing claims **characterised in that** it comprises means (34) for transferring the assembled wrappers (17) to a unit (35) for forming and folding the wrappers, the transfer means (34) receiving the wrappers (17) which have been assembled in the feed means and feed them at a predetermined speed (V0) equal to the speed at which they are fed by the wrapper forming or folding unit (33).

38. The apparatus according to claim 37, **characterised in that** the means for transferring the assembled wrappers comprise at least one conveyor belt (34) whose lower surface (36) retains the assembled wrappers (17).

39. The apparatus according to claim 37 or 38, **characterised in that** it comprises means (26") for passing the assembled wrappers (17) from the feed means (30) to the transfer means (34).

40. The apparatus according to any of the foregoing claims **characterised in that** it comprises means for dispensing a label comprising means (126) for feeding the label.

41. The apparatus according to claim 40, **characterised in that** the label feed means consist of a conveyor belt (126).

42. The apparatus according to claim 40 or 41, **characterised in that** the motion with which the label feed means are driven is continuous or substantially continuous.

43. The apparatus according to any of the foregoing claims from 40 to 42, **characterised in that** the label feed means have an inclined section (126') that makes a predetermined angle (B) with the vertical.

44. The apparatus according to any of the foregoing claims from 40 to 43, **characterised in that** the label feed means constitute means for assembling the label to the wrapper sheet at an end area (126a) of the inclined section of the label feed means.

45. The apparatus according to any of the foregoing claims from 40 to 44, **characterised in that** the label feed means constitute means for passing the wrapper element to the feed and forming means (134) of the wrapping machine.

46. The apparatus according to claim 45, **characterised in that** the means for transferring the wrapper element to the feed and forming means (134) of the wrapping machine consist of a short section (126d) of the conveyor belt (126) located downstream of the section where the wrapper element is received.

47. The apparatus according to any of the foregoing claims **characterised in that** it comprises means (42) for applying glue to the labels (16).

48. The apparatus according to claim 47, **characterised in that** the glue application means (42) comprise a first element (44) and a second element for applying glue to the labels (16), the two glue application elements being longitudinally spaced from each other, the speed at which the labels (16) are fad by the label dispensing means (26) being such as to carry the labels to the glue application elements (44, 42).

49. The apparatus according to claim 47 or 48, **characterised in that** the glue application means comprise means for dispensing the glue to the label (16) and means (46, 48, 50, 52) for driving the glue dispensing means (42', 42", 44', 44") designed to make the glue dispensing means (42', 42", 44', 44") follows a glue dispensing path parallel to and at the same speed

as the path followed by the means (26) for feeding the labels (16) in the section where the glue is applied to them,

50. The apparatus according to claim 49, **characterised in that** the means for driving the glue dispensing means (42', 42", 44', 44") comprise a plate (46) for mounting the glue dispensing means (42', 42", 44', 44") and means (48, 50, 42) for making the plate (46) follow a closed path having one section parallel to the label (16) feed belt (26).

51. The apparatus according to any of the foregoing claims **characterised in that** it comprises means for transferring the label (16) to means for dispensing the labels (16).

52. The apparatus according to claim 51, **characterised in that** the dispensing means comprise means for housing the labels (16) having an open end (54a) through which the labels (16) are fed out, means being provided for picking up the labels (16) from the housing means and transferring them to the label (16) dispensing means (26).

53. The apparatus according to claim 52, **characterised in that** the means for picking up and transferring the labels (16) comprise means for gripping the labels (16) and having a surface (59) for supporting and retaining a respective label (16) and drive means for moving the gripping means between a position where a label is picked up from the housing means and a position where the label is fed out to the dispensing means. 53

54. The apparatus according to claim 53, **characterised in that** the retaining surface (59) has a permeable structure or suitable holes connected to means for creating a negative pressure, or pressure below atmospheric pressure, in such a way as to hold the labels (12) to the retaining surface (59) by suction.

55. The apparatus according to claim 53 or 54, **characterised in that** the means for driving the gripping means consist of revolving element (60) positioned between the outfeed end (54a) of the housing means (54) and the means (26) for dispensing the labels (16) .

56. The apparatus according to claim 55, **characterised in that** it comprises drive means (62) for moving the label (16) gripping element (58) between an outside extended radial position where the labels (16) are picked up from the housing means and fed out to the dispensing means and a retracted inside radial position in which the labels (16) are transported.

57. The apparatus according to claim 56, **characterised in that** the means for moving the gripping element between an extended position and a retracted transfer position comprise a cam profile (62) that acts in conjunction with a corresponding portion (64) of the label (16) gripping element (58).

58. The apparatus according to claim 57, **characterised in that** it comprises means (66) for moving the cam profile (62) between a radially extended outside position and a transfer position.

59. The apparatus according to any of the foregoing claims from 52 to 58, **characterised in that** the labels are fed out to the label dispensing means (26) as the latter move.

60. The apparatus according to any of the foregoing claims from 52 to 59, **characterised in that** the means for housing the labels (16) comprise a plurality of tubes (54) for housing the labels (16), each tube being designed to feed out corresponding labels (16).

61. Use of an apparatus according to any of the foregoing claims in a machine for wrapping a pasty, liquid or semi-liquid food product, and in particular, for wrapping processed cheese.

Patentansprüche

1. Vorrichtung zur Herstellung von Umhüllungselementen oder Umhüllungen (17) in einer Maschine zur Umhüllung eines pastösen, flüssigen oder halbflüssigen Lebensmittelprodukts, im Besonderen von Schmelzkäse, umfassend Mittel zur Anordnung der Umhüllungselemente, oder von Teilen davon, mindestens einschließend Mittel (18) zur Ausgabe der Umhüllungsfolien, die dazu konzipiert sind, eine Reihe von Folien (12) zuzuführen, Mittel (22) zur Ausgabe der Aufreißstreifen, und Mittel (30, 130) zum Zusammensetzen der flachen Umhüllungsfolien (12), die von den entsprechenden Mitteln (18) zur Ausgabe von Umhüllungsfolien empfangen werden, mit den Aufreißstreifen (14), die von den entsprechenden Mitteln zur Ausgabe von Aufreißstreifen empfangen werden, wobei die Vorrichtung **dadurch gekennzeichnet ist, dass** sie Mittel (26) zur Ausgabe von Etiketten (16, 126) umfasst, die auf den Mitteln (30, 130) zusammenzusetzen sind, um die flachen Umhüllungsfolien mit den Aufreißstreifen zusammenzusetzen; dass die Mittel (30, 130) zum Zusammensetzen der flachen Umhüllungsfolien (12), die Aufreißstreifen (14) und das Etikett in Form eines sich drehenden Rads (30) vorliegen, umfassend eine Vielzahl von Aufnahmen (32) zum aufeinanderfolgenden Empfang der Aufreißstreifen (14), der Umhüllungsfolien (12) auf den Aufreißstreifen (14)

und der Etiketten auf den Umhüllungsfolien (12), wobei jedes Etikett (16) über der entsprechende Folie (12) platziert werden kann, die bereits auf einem Aufreißstreifen (14) liegt, indem es eine Ruhelage einnimmt und auf der Fläche der Umhüllungsfolie (12) gegenüber der Fläche fixiert wird, die in Kontakt mit der Halteoberfläche (32) der zusammensetzenden Mittel (30) ist und die zuoberst auf dem entsprechenden Aufreißstreifen (14) liegt.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** sie vor der Umhüllungsformungszone der Maschine angeordnete Mittel zur Synchronisierung der Umhüllungen oder Umhüllungselemente umfasst.

3. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Bewegung der Zuführmittel (30, 130) kontinuierlich oder im Wesentlichen kontinuierlich ist.

4. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Zuführmittel (130) Mittel (132) zum Tragen der Umhüllung oder des Umhüllungselements umfassen und aus einer Platte mit einer Trägeroberfläche (132a) zum Halten der Umhüllung oder des Umhüllungselements bestehen.

5. Vorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** die Mittel zum Tragen der Umhüllungen oder der Umhüllungselemente eine Vielzahl von Aufnahmen (32) zum aufeinanderfolgenden Empfang von Umhüllungselementen umfassen, die bei Intervallen festgelegter Längen (P) beabstandet sind und auf denen die Umhüllungselemente mittig platziert sind.

6. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Trägermittel (132) Saughaltemittel zum Festhalten der Umhüllungen oder Umhüllungselemente an der Trägeroberfläche (132a) umfassen.

7. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sich das Trägerrad mit einer kontinuierlichen oder im Wesentlichen kontinuierlichen Bewegung dreht.

8. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Zuführmittel (30) in Form eines sich drehenden Rads (30) vorliegen, aufweisend Mittel (32) zum Tragen der Umhüllungsfolien (12), an denen die Etiketten (16) angebracht sind.

9. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sich die Zuführmittel (30, 130) in einer vertikalen Ebene bewegen.

10. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel zur Bewegung der Trägermittel relativ zu den Mitteln (138, 118, 140, 126) zur Anordnung der Umhüllung oder des Umhüllungselements umfasst, sodass eine entsprechende Handlung auf die Umhüllung oder das Umhüllungselement ausgeübt wird.

11. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel zur Bewegung der Trägermittel relativ zu den Zuführmitteln (133) zwischen einer Förderstellung und einer Arbeitsstellung umfasst.

12. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zum Tragen der Umhüllungen oder Umhüllungselemente dazu konzipiert sind, die Trägermittel in einem ortsfesten Zustand zu halten, während die Zuführmittel (133) zu den Trägermitteln (132) zuführen.

13. Vorrichtung nach Anspruch 12, **dadurch gekennzeichnet, dass** die Mittel zur Bewegung der Trägeroberfläche, welche die Umhüllungen oder Umhüllungselemente hält, dazu konzipiert sind, die Trägeroberfläche in so einem Zustand zu halten, sodass sie relativ zu den Mitteln (138) zur Ausgabe der Aufreißstreifen in einem bestimmten Abstand vom Übertragungsende der Mittel zur Ausgabe der Aufreißstreifen ortsfest sind.

14. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zur Bewegung der Trägermittel der Umhüllung oder des Umhüllungselements dazu konzipiert sind, die Trägermittel (132) in Kontakt mit Mitteln (140) zum Versiegeln der Aufreißstreifen an den Umhüllungsfolien zu halten.

15. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zur Bewegung der Trägermittel der Umhüllung oder des Umhüllungselements dazu konzipiert sind, die Trägermittel in einem ortsfesten Zustand auf einer entsprechenden Arbeitsoberfläche zu rotieren, wenn sich die Zuführmittel (133) bewegen.

16. Vorrichtung nach Anspruch 15, **dadurch gekennzeichnet, dass** die Mittel zur Bewegung der Trägermittel der Umhüllung oder des Umhüllungselements dazu konzipiert sind, die Trägermittel in einem ortsfesten Zustand auf einer entsprechenden Arbeitsoberfläche der sich drehenden Ausgabemittel (118) zu rotieren, um die Umhüllungsfolien von den Ausgabemitteln aufzunehmen.

17. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zur Bewegung der Trägermittel der Umhüllung oder des Umhüllungselements dazu konzipiert sind, die Trägermittel in so einem Zustand zu halten, dass, wenn sich die Zuführmittel (133) bewegen, die Trägermittel (132) parallel zu einer entsprechenden Oberfläche sind, die sich in einer linearen Richtung bewegt.

18. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zur Bewegung der Trägermittel der Umhüllung oder des Umhüllungselements dazu konzipiert sind, die Trägermittel (132) in so einem Zustand zu halten, dass sie parallel zu einer entsprechenden Oberfläche der Mittel (126) zur Zufuhr der Etiketten sind, wobei sich die Oberfläche des Trägers, der das Umhüllungselement hält, gemeinsam mit den Mitteln zur Zufuhr der Etiketten und mit derselben linearen Bewegung wie die Mittel zur Zufuhr der Etiketten bewegt.

19. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zur Bewegung der Trägermittel einen ersten Trägerarm (135) und einen zweiten Trägerarm (137) umfassen, die mit den Mitteln (132) zum Tragen des Umhüllungselements und mit den Zuführmitteln (133) gelenkartig verbunden sind.

20. Vorrichtung nach Anspruch 19, **dadurch gekennzeichnet, dass** sie Mittel zum rotierenden Antrieb der Arme (135, 137) umfasst.

21. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zum Verbinden der Zuführmittel Mittel zum Antrieb der Gelenkbolzen (135c, 137c) der Trägerarme (135, 137) auf den Zuführmitteln umfassen.

22. Vorrichtung nach Anspruch 21, **dadurch gekennzeichnet, dass** die Mittel zum Antrieb der Bolzen durch erste und zweite Verbindungen definiert sind.

23. Vorrichtung nach Anspruch 22, **dadurch gekennzeichnet, dass** die erste Verbindung in Form eines Gelenkhebels (139) vorliegt.

24. Vorrichtung nach Anspruch 22 oder 23, **dadurch gekennzeichnet, dass** die zweite Verbindung in Form einer Kreisplatte (141) vorliegt, die rotierbar in einer entsprechenden kreisrunden Aufnahme (141) in den Zuführmitteln (133) gehalten wird.

25. Vorrichtung nach einem der vorangehenden Ansprüche von 22 bis 24, **dadurch gekennzeichnet, dass**, an ihren Enden (139a, 141a), die Mittel zum Antrieb der Arme, welche die Oberfläche zum Halten der Umhüllung tragen, den Gelenkbolzen des entsprechenden Trägerarms tragen und, an ihren anderen Enden (139b, 141b), mit einem gemeinsamen Gelenkbolzen (143) verbunden sind, der an den Zuführmitteln (133) fixiert ist.

26. Vorrichtung nach einem der vorangehenden Ansprüche von 22 bis 25, **dadurch gekennzeichnet, dass** sie Mittel zum Antrieb der ersten und zweiten Verbindung oder Antriebsmittel zwischen einer Stellung, in der die Arme im Förderzustand sind und einer Stellung, in der die Arme im Aufnehmzustand sind, umfassen.

27. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel (122) zur Ausgabe der Aufreißstreifen umfasst, die in Form von ersten und zweiten Schneideelementen (12, 122) vorliegen, die in der Zuführrichtung (A) beabstandet sind.

28. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel (22) zur Ausgabe der Aufreißstreifen ein entsprechendes Ende (22a) aufweisen, das sich auf den Zuführmitteln (30) an einem Empfangspunkt erstreckt, der in der Bewegungsrichtung der Zuführmittel (30) nach dem Punkt angeordnet liegt, an dem die Aufreißstreifen (14) empfangen werden, und vor dem Punkt angeordnet liegt, an dem die Folien (12) ausgegeben werden, sodass jede Folie (12) auf den Zuführmitteln (30) zuoberst auf dem entsprechenden Aufreißstreifen (14) liegt.

29. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Mittel zur Ausgabe von Umhüllungsfolien eine sich drehende Rolle (118) umfassen.

30. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel (38) zum Schneiden der Aufreißstreifen (14) von einem Band (15) Materials für Aufreißstreifen (14) umfasst, wobei die Aufreißstreifenschneidmittel (14) dazu konzipiert sind, die Aufreißstreifen (14) von einem Band zu schneiden und sie auf den Mitteln (22) zur Ausgabe der Aufreißstreifen (14) zu platzieren.

31. Vorrichtung nach Anspruch 30, **dadurch gekennzeichnet, dass** die Mittel (22) zur Ausgabe der Aufreißstreifen so bei einer Geschwindigkeit angetrieben werden, dass sich die Aufreißstreifen bei derselben Geschwindigkeit wie die Zuführmittel (30) bewegen und an die Zuführmittel (30) übertragen werden können, wobei der Antrieb intermittierend ist, sodass die Ausgabemittel anhalten, wenn die Aufreißstreifen (14) von den Schneidmitteln (38) emp-

fangen werden.

32. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel zum kontinuierlichen Versiegeln der Aufreißstreifen (14) an den Umhüllungsfolien (14) umfasst.

33. Vorrichtung nach Anspruch 32, **dadurch gekennzeichnet, dass** die Mittel zum Versiegeln der Aufreißstreifen (14) an den Umhüllungsfolien (12) in Form einer sich drehenden Heizrolle (40) vorliegen, die in Kontakt mit der Oberfläche gehalten wird, die die Aufreißstreifen (14) und die Folien (12) so hält, dass die über den entsprechenden Aufreißstreifen (14) platzierten Folien (12) erhitzt werden.

34. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel (140) zum Versiegeln der Umhüllungsfolien an den Aufreißstreifen umfasst, die in Form einer Platte (140) mit einer Kontaktoberfläche (141) vorliegen.

35. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel (140) zum Versiegeln der Umhüllungsfolien an den Aufreißstreifen umfasst, aufweisend eine Versiegelungsoberfläche (141), die sich in einer schrägen Richtung erstreckt, die einen festgelegten Winkel (A) mit einer Richtung tangential zur Zuführrichtung bildet.

36. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel zur Zufuhr der Umhüllungsfolien umfasst, deren Bewegung kontinuierlich oder im Wesentlichen kontinuierlich ist.

37. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel (34) zur Übertragung der zusammengefügten Umhüllungen (17) an eine Einheit (35) zum Formen und Falten der Umhüllungen umfasst, wobei die Übertragungsmittel (34) die Umhüllungen (17) empfangen, die in den Zuführmitteln zusammengefügt wurden, und sie bei einer festgelegten Geschwindigkeit (V0) zuführen, die der Geschwindigkeit entspricht, bei der sie von der Einheit (33) zum Formen oder Falten von Umhüllungen zugeführt werden.

38. Vorrichtung nach Anspruch 37, **dadurch gekennzeichnet, dass** die Mittel zur Übertragung der zusammengefügten Umhüllungen mindestens ein Förderband (34) umfassen, dessen untere Oberfläche (36) die zusammengefügten Umhüllungen (17) hält.

39. Vorrichtung nach Anspruch 37 oder 38, **dadurch gekennzeichnet, dass** sie Mittel (26") zum Übergeben der zusammengefügten Umhüllungen (17) von den Zuführmitteln (30) an die Übertragungsmittel (34) umfasst.

40. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel zur Ausgabe eines Etiketts umfasst, umfassend Mittel (126) zum Zuführen des Etiketts.

41. Vorrichtung nach Anspruch 40, **dadurch gekennzeichnet, dass** die Mittel zur Zufuhr von Etiketten aus einem Förderband (126) bestehen.

42. Vorrichtung nach Anspruch 40 oder 41, **dadurch gekennzeichnet, dass** die Bewegung, mit der die Mittel zur Zufuhr von Etiketten angetrieben werden, kontinuierlich oder im Wesentlichen kontinuierlich ist.

43. Vorrichtung nach einem der vorangehenden Ansprüche 40 bis 42, **dadurch gekennzeichnet, dass** die Mittel zur Zufuhr von Etiketten einen schrägen Abschnitt (126') aufweisen, der mit der Vertikalen einen festgelegten Winkel (B) bildet.

44. Vorrichtung nach einem der vorangehenden Ansprüche 40 bis 43, **dadurch gekennzeichnet, dass** die Mittel zur Zufuhr von Etiketten Mittel zum Zusammensetzen des Etiketts mit der Umhüllungsfolie an einem Endgebiet (126a) des schrägen Abschnitts der Mittel zur Zufuhr der Etiketten darstellen.

45. Vorrichtung nach einem der vorangehenden Ansprüche 40 bis 44, **dadurch gekennzeichnet, dass** die Mittel zur Zufuhr von Etiketten Mittel zum Übergeben des Umhüllungselements an die Zufuhr- und Formungsmittel (134) der Umhüllungsmaschine darstellen.

46. Vorrichtung nach Anspruch 45, **dadurch gekennzeichnet, dass** die Mittel zur Übertragung des Umhüllungselements an die Zufuhr- und Formungsmittel (134) der Umhüllungsmaschine aus einem kurzen Abschnitt (126d) des Förderbands (126) bestehen, der nach dem Abschnitt angeordnet ist, an dem das Umhüllungselement empfangen wird.

47. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel (42) zum Auftragen von Klebstoff auf die Etiketten (6) umfasst.

48. Vorrichtung nach Anspruch 47, **dadurch gekennzeichnet, dass** die Mittel (42) zum Auftragen von Klebstoff ein erstes Element (44) und ein zweites Element zum Auftragen von Klebstoff auf die Etiketten (16) umfassen, wobei die beiden Elemente zum Auftragen von Klebstoff longitudinal voneinander beabstandet sind, wobei die Geschwindigkeit, bei der

die Etiketten (16) von den Mitteln (26) zur Ausgabe von Etiketten zugeführt werden, so ist, dass die Etiketten zu den Elementen (44, 42) zum Auftragen von Klebstoff geführt werden.

49. Vorrichtung nach Anspruch 47 oder 48, **dadurch gekennzeichnet, dass** die Mittel zum Auftragen von Klebstoff Mittel zur Ausgabe des Klebstoffs an das Etikett (16) und Mittel (46, 48, 50, 52) zum Antrieb der Klebstoffausgabemittel (42', 42", 44', 44") umfassen, die dazu konzipiert sind, die Klebstoffausgabemittel (42', 42", 44', 44") einer Klebstoffausgabebahn parallel und bei derselben Geschwindigkeit wie die Bahn folgen zu lassen, der die Mittel (26) zum Zuführen der Etiketten (16) im Abschnitt folgen, in dem der Klebstoff auf sie aufgetragen wird.

50. Vorrichtung nach Anspruch 49, **dadurch gekennzeichnet, dass** die Mittel zum Antrieb der Klebstoffausgabemittel (42', 42", 44', 44") eine Platte (46) zur Befestigung der Klebstoffausgabemittel (42', 42", 44', 44") und Mittel (48, 50, 42) umfassen, mit denen die Platte (46) einer geschlossenen Bahn folgt, aufweisend einen Abschnitt, der parallel zum Zuführband (26) von Etiketten (16) ist.

51. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** sie Mittel zur Übertragung des Etiketts (16) an Mittel zur Ausgabe der Etiketten (16) umfasst.

52. Vorrichtung nach Anspruch 51, **dadurch gekennzeichnet, dass** die Ausgabemittel Mittel zur Unterbringung der Etiketten (16), aufweisend ein offenes Ende (54a), durch welches die Etiketten (16) ausgeleitet werden, umfassen, wobei Mittel für das Aufnehmen der Etiketten (16) von den Unterbringungsmitteln und für ihre Übertragung an die Ausgabemittel (26) der Etiketten (16) bereitgestellt sind.

53. Vorrichtung nach Anspruch 52 **dadurch gekennzeichnet, dass** die Mittel zum Aufnehmen und Übertragung der Etiketten (16) Mittel zum Greifen der Etiketten (16) umfassen und eine Oberfläche (59) zum Tragen und Halten eines entsprechenden Etiketts (16) sowie Antriebsmittel zum Bewegen der Greifmittel zwischen einer Stellung, in der ein Etikett von den Unterbringungsmitteln aufgenommen wird und einer Stellung, in der das Etikett zu den Ausgabemitteln austritt, aufweisen.

54. Vorrichtung nach Anspruch 53, **dadurch gekennzeichnet, dass** die Halteoberfläche (59) eine durchlässige Struktur oder geeignete Löcher aufweist, die mit Mitteln zur Bildung eines Unterdrucks oder Drucks unter Atmosphärendruck verbunden sind, sodass die Etiketten (12) an der Halteoberfläche (59) durch Ansaugen festgehalten wird.

55. Vorrichtung nach Anspruch 53 oder 54, **dadurch gekennzeichnet, dass** die Mittel zum Antrieb der Greifmittel aus einem sich drehenden Element (60) bestehen, das zwischen dem Austrittende (54a) der Unterbringungsmittel (54) und den Mitteln (26) zur Ausgabe der Etiketten (16) in Stellung gebracht ist.

56. Vorrichtung nach Anspruch 55 **dadurch gekennzeichnet, dass** sie Antriebsmittel (62) zum Bewegen des Greifelements (58) des Etiketts (16) zwischen einer äußeren ausgestreckten, radialen Stellung, in der die Etiketten (16) aus den Unterbringungsmitteln aufgenommen werden und zu den Ausgabemitteln ausgeleitet werden, und einer eingezogenen inneren, radialen Stellung, in der die Etiketten (16) transportiert werden, umfasst.

57. Vorrichtung nach Anspruch 56, **dadurch gekennzeichnet, dass** die Mittel zur Bewegung des Greifelements zwischen einer ausgestreckten Stellung und einer eingezogenen Übertragungsstellung ein Nockenprofil (62) umfassen, das gemeinsam mit einem entsprechenden Bereich (64) des Greifelements (58) des Etiketts (16) wirkt.

58. Vorrichtung nach Anspruch 57, **dadurch gekennzeichnet, dass** sie Mittel (66) zur Bewegung des Nockenprofils (62) zwischen einer radialen ausgestreckten, äußeren Stellung und einer Übertragungsstellung umfasst.

59. Vorrichtung nach einem der vorangehenden Ansprüche 52 bis 58, **dadurch gekennzeichnet, dass** die Etiketten zu den Mitteln (26) zur Ausgabe von Etiketten ausgeleitet werden, wenn sich diese bewegen.

60. Vorrichtung nach einem der vorangehenden Ansprüche 52 bis 59, **dadurch gekennzeichnet, dass** die Mittel zur Unterbringung der Etiketten (16) eine Vielzahl von Röhren (54) zur Unterbringung der Etiketten (16) umfassen, wobei jede Röhre dazu konzipiert ist, entsprechende Etiketten (16) auszuleiten.

61. Verwendung einer Vorrichtung nach einem der vorangehenden Ansprüche in einer Maschine zur Umhüllung eines pastösen, flüssigen oder halbflüssigen Lebensmittelprodukts, im Besonderen zur Umhüllung von Schmelzkäse.

Revendications

1. Appareil de fabrication d'éléments d'emballage ou d'emballages (17) dans une machine pour emballer un produit alimentaire pâteux, liquide ou semi-liquide, et notamment, le fromage à tartiner, comprenant des moyens pour positionner les éléments d'embal-

lage, ou leurs parties, présentant au moins des moyens (18) pour distribuer les feuilles d'emballage conçus pour acheminer une rangée de feuilles (12), des moyens (22) pour distribuer les bandes déchirables, et des moyens (30, 130) pour assembler les feuilles d'emballage plates (12), reçues des moyens de distribution respectifs des feuilles d'emballage (18), avec les bandes déchirables (14), reçues des moyens de distribution respectifs des bandes déchirables, l'appareil **se caractérisant en ce qu'**il comprend des moyens (26) pour distribuer des étiquettes (16, 126) à assembler sur les moyens (30, 130) pour assembler les feuilles d'emballage plates avec les bandes déchirables; **en ce que** les moyens (30, 130) pour assembler les feuilles d'emballage plates (12), les bandes déchirables (14) et l'étiquette prennent la forme d'une roue tournante (30) présentant une pluralité de sièges (32) pour recevoir, en séquence, les bandes déchirables (14), les feuilles d'emballage (12) sur les bandes déchirables (14) et les étiquettes sur les feuilles d'emballage (12), sur laquelle chaque étiquette (16) peut être placée sur la feuille correspondante (12), qui se trouve déjà sur une bande déchirable (14), qui vient se déposer et se fixer sur la face de la feuille d'emballage (12) à l'opposé de la face qui est en contact avec la surface de retenue (32) des moyens d'assemblage (30) et qui est au-dessus de la bande déchirable correspondante (14).

2. Appareil selon la revendication 1, **caractérisé en ce qu'**il comprend, en amont de la zone de formation des emballages de la machine, des moyens pour synchroniser les emballages ou éléments d'emballage.

3. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le mouvement des moyens d'acheminement (30, 130) est continu ou essentiellement continu.

4. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens d'acheminement (130) comprennent des moyens (132) pour soutenir l'emballage ou élément d'emballage et consistant en une plaque avec une surface de support (132a) pour retenir l'emballage ou élément d'emballage.

5. Appareil selon la revendication 4, **caractérisé en ce que** les moyens pour soutenir les emballages ou éléments d'emballage comprennent une pluralité de sièges (32) pour recevoir, en séquence, des éléments d'emballage, espacés à des intervalles de longueurs prédéterminées (P), et sur lesquels les éléments d'emballage sont placés centralement.

6. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens de support (132) comprennent des moyens de retenue par aspiration pour tenir les emballages ou éléments d'emballage sur la surface de support (132a).

7. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la roue de support tourne en mouvement continu ou essentiellement continu.

8. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens d'acheminement (30) prennent la forme d'une roue tournante (30), avec des moyens (32) pour soutenir les feuilles d'emballage (12) sur lesquelles sont appliquées les étiquettes (16).

9. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le mouvement des moyens d'acheminement (30, 130) se fait sur un plan vertical.

10. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens pour déplacer les moyens de support par rapport aux moyens (138, 118, 140, 126) pour disposer l'emballage ou élément d'emballage, de sorte à faire une opération correspondante sur l'emballage ou élément d'emballage.

11. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens pour déplacer les moyens de support par rapport aux moyens d'acheminement (133) entre une position de transport et une position de travail.

12. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens pour soutenir les emballages ou éléments d'emballage sont conçus pour garder les moyens de support dans une condition immobile, pendant que les moyens d'acheminement (133) alimentent les moyens de support (132).

13. Appareil selon la revendication 12, **caractérisé en ce que** les moyens pour déplacer la surface de support qui retient les emballages ou éléments d'emballage, sont conçus pour garder la surface de support dans une condition telle qu'elle est immobile par rapport aux moyens de distribution des bandes déchirables (138), à une certaine distance de l'extrémité de transfert des moyens de distribution des bandes déchirables.

14. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens pour déplacer les moyens de support de l'emballage ou élément d'emballage, sont conçus pour garder les moyens de support (132) en contact avec les

moyens (140) pour sceller les bandes déchirables sur les feuilles d'emballage.

15. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens pour déplacer les moyens de support de l'emballage ou élément d'emballage, sont conçus pour faire passer les moyens de support à l'arrêt, sur une surface de travail correspondante, lorsque les moyens d'acheminement (133) bougent.

16. Appareil selon la revendication 15, **caractérisé en ce que** les moyens pour déplacer les moyens de support de l'emballage ou élément d'emballage, sont conçus pour faire passer les moyens de support à l'arrêt, sur une surface de travail correspondante des moyens de distribution tournants (118), afin de prélever les feuilles d'emballage sur les moyens de distribution.

17. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens pour déplacer les moyens de support de l'emballage ou élément d'emballage, sont conçus pour garder les moyens de support dans une condition telle que, lorsque les moyens d'acheminement (133) bougent, les moyens de support (132) sont parallèles à une surface correspondante qui se déplace dans une direction linéaire.

18. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens pour déplacer les moyens de support de l'emballage ou élément d'emballage, sont conçus pour garder les moyens de support (132) dans une condition telle qu'ils sont parallèles à une surface correspondante des moyens d'acheminement des étiquettes (126), la surface du support qui retient l'élément d'emballage se déplaçant avec les moyens d'acheminement des étiquettes et avec le même mouvement linéaire que celui des moyens d'acheminement des étiquettes.

19. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens pour déplacer les moyens de support comprennent un premier bras de support (135) et un second bras de support (137) qui sont liés de façon articulée aux moyens (132) pour soutenir l'élément d'emballage et aux moyens d'acheminement (133).

20. Appareil selon la revendication 19, **caractérisé en ce qu'**il comprend des moyens pour entraîner les bras (135, 137) en rotation.

21. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens pour lier les moyens d'acheminement comprennent des moyens pour entraîner les axes d'articulation (135c, 137c) des bras de support (135, 137) sur les moyens d'acheminement.

22. Appareil selon la revendication 21, **caractérisé en ce que** les moyens pour entraîner les axes, sont formés par une première et par une seconde liaisons.

23. Appareil selon la revendication 22, **caractérisé en ce que** la première liaison prend la forme d'un levier articulé (139).

24. Appareil selon les revendications 22 ou 23, **caractérisé en ce que** la seconde liaison prend la forme d'une plaque circulaire (141) retenue de façon rotative à l'intérieur d'un siège circulaire respectif (141), sur les moyens d'acheminement (133).

25. Appareil selon l'une quelconque des revendications précédentes 22 à 24, **caractérisé en ce que**, à leurs extrémités (139a, 141a), les moyens pour entraîner les bras qui soutiennent la surface de retenue de l'emballage, soutiennent l'axe d'articulation du bras de support respectif et, à leurs autres extrémités (139b, 141b), sont reliés à un axe d'articulation commun (143) fixé aux moyens d'acheminement (133).

26. Appareil selon l'une quelconque des revendications précédentes 22 à 25, **caractérisé en ce qu'**il comprend des moyens pour entraîner la première et la seconde liaisons ou les moyens d'entraînement, entre une position dans laquelle les bras se trouvent dans la condition de transport et une position dans laquelle les bras se trouvent dans la condition de prélèvement.

27. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens (122) pour distribuer les bandes déchirables, prenant la forme du premier et du second éléments de découpe (12, 122) espacés dans la direction d'acheminement (A).

28. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les moyens (22) pour distribuer les bandes déchirables, présentent une extrémité respective (22a) se développant sur les moyens d'acheminement (30) à un point de réception qui, dans la direction de mouvement des moyens d'acheminement (30), se situe en aval du point où sont reçues les bandes déchirables (14), et en amont du point où sont distribuées les feuilles (12), de sorte que chaque feuille (12) est placée sur les moyens d'acheminement (30) au-dessus de la bande déchirable correspondante (14).

29. Appareil selon l'une quelconque des revendications

précédentes, **caractérisé en ce que** les moyens de distribution des feuilles d'emballage comprennent un rouleau tournant (118).

30. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens (38) pour découper les bandes déchirables (14) depuis une bande (15) de matériel pour bandes déchirables (14), lesdits moyens de découpe des bandes déchirables (14) étant conçus pour découper les bandes déchirables (14) depuis une bande et pour les placer sur les moyens (22) pour distribuer les bandes déchirables (14).

31. Appareil selon la revendication 30, **caractérisé en ce que** les moyens de distribution des bandes déchirables (22) sont entraînés à une vitesse telle que les bandes déchirables se déplacent à la même vitesse que les moyens d'acheminement (30) et peuvent être transférées vers les moyens d'acheminement (30), l'entraînement étant intermittent pour que les moyens de distribution s'arrêtent lorsque les bandes déchirables (14) sont reçues des moyens de découpe (38).

32. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens pour sceller en continu les bandes déchirables (14) sur les feuilles d'emballage (14).

33. Appareil selon la revendication 32, **caractérisé en ce que** les moyens pour sceller les bandes déchirables (14) sur les feuilles d'emballage (12) prennent la forme d'un rouleau chauffant tournant (40) qui est maintenu en contact avec la surface qui retient les bandes déchirables (14) et les feuilles (12), de sorte à chauffer les feuilles (12) placées sur les bandes déchirables respectives (14).

34. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens (140) pour sceller les feuilles d'emballage sur les bandes déchirables et prenant la forme d'une plaque (140) avec une surface de contact (141).

35. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens (140) pour sceller les feuilles d'emballage sur les bandes déchirables et présentant une surface de scellement (141) qui se développe dans une direction inclinée qui forme un angle prédéterminé (A) avec une direction tangentielle à la direction d'acheminement.

36. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens pour acheminer les feuilles d'emballage, dont le mouvement est continu ou essentiellement continu.

37. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens (34) pour transférer les emballages assemblés (17) vers une unité (35) pour former et pour plier les emballages, les moyens de transfert (34) recevant les emballages (17) assemblés sur les moyens d'acheminement et les acheminant à une vitesse prédéterminée (VO) égale à la vitesse à laquelle ils sont acheminés par l'unité de formation ou pliage des emballages (33).

38. Appareil selon la revendication 37, **caractérisé en ce que** les moyens pour transférer les emballages assemblés, comprennent au moins un tapis transporteur (34), dont la surface inférieure (36) retient les emballages assemblés (17).

39. Appareil selon les revendications 37 ou 38, **caractérisé en ce qu'**il comprend des moyens (26") pour faire passer les emballages assemblés (17) des moyens d'acheminement (30) aux moyens de transfert (34).

40. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens pour distribuer une étiquette, avec des moyens (126) pour acheminer l'étiquette.

41. Appareil selon la revendication 40, **caractérisé en ce que** les moyens d'acheminement des étiquettes consistent en un tapis transporteur (126).

42. Appareil selon les revendications 40 ou 41, **caractérisé en ce que** le mouvement avec lequel sont entraînés les moyens d'acheminement des étiquettes, est continu ou essentiellement continu.

43. Appareil selon l'une quelconque des revendications précédentes 40 à 42, **caractérisé en ce que** les moyens d'acheminement des étiquettes présentent une section inclinée (126') qui forme un angle prédéterminé (B) avec la verticale.

44. Appareil selon l'une quelconque des revendications précédentes 40 à 43, **caractérisé en ce que** les moyens d'acheminement des étiquettes constituent des moyens pour assembler l'étiquette sur la feuille d'emballage à une zone terminale (126a) de la section inclinée des moyens d'acheminement des étiquettes.

45. Appareil selon l'une quelconque des revendications précédentes 40 à 44, **caractérisé en ce que** les moyens d'acheminement des étiquettes constituent des moyens pour faire passer l'élément d'emballage aux moyens d'acheminement et de formation (134)

de la machine d'emballage.

46. Appareil selon la revendication 45, **caractérisé en ce que** les moyens pour transférer l'élément d'emballage vers les moyens d'acheminement et de formation (134) de la machine d'emballage, consistent en une section courte (126d) du tapis transporteur (126), située en aval de la section où est reçu l'élément d'emballage.

47. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens (42) pour appliquer la colle sur les étiquettes (16).

48. Appareil selon la revendication 47, **caractérisé en ce que** les moyens d'application de la colle (42) comprennent un premier élément (44) et un second élément pour appliquer la colle sur les étiquettes (16), les deux éléments d'application de la colle étant espacés longitudinalement l'un de l'autre, la vitesse à laquelle sont acheminées les étiquettes (16) par les moyens de distribution des étiquettes (26) étant telle que les étiquettes sont transportées vers les éléments d'application de la colle (44, 42).

49. Appareil selon les revendications 47 ou 48, **caractérisé en ce que** les moyens d'application de la colle comprennent des moyens pour distribuer la colle sur l'étiquette (16) et des moyens (46, 48, 50, 52) pour entraîner les moyens de distribution de la colle (42', 42", 44', 44"), conçus pour pousser les moyens de distribution de la colle (42', 42", 44', 44") à suivre une trajectoire de distribution de la colle parallèle à et à la même vitesse que la trajectoire suivie par les moyens (26) pour acheminer les étiquettes (16) dans la section où la colle y est appliquée.

50. Appareil selon la revendication 49, **caractérisé en ce que** les moyens pour entraîner les moyens de distribution de la colle (42', 42", 44', 44") comprennent une plaque (46) pour monter les moyens de distribution de la colle (42', 42", 44', 44") et des moyens (48, 50, 42) pour pousser la plaque (46) à suivre une trajectoire fermée ayant une section parallèle au tapis d'acheminement (26) des étiquettes (16) .

51. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend des moyens pour transférer l'étiquette (16) vers des moyens pour distribuer les étiquettes (16).

52. Appareil selon la revendication 51, **caractérisé en ce que** les moyens de distribution comprennent des moyens pour loger les étiquettes (16), avec une extrémité ouverte (54a) par laquelle sortent les étiquettes (16), des moyens étant prévus pour prélever les étiquettes (16) sur les moyens de logement et pour les transférer vers les moyens de distribution (26) des étiquettes (16).

53. Appareil selon la revendication 52, **caractérisé en ce que** les moyens pour prélever et pour transférer les étiquettes (16) comprennent des moyens pour prendre les étiquettes (16) et présentant une surface (59) pour soutenir et pour retenir une étiquette respective (16), et des moyens d'entraînement pour déplacer les moyens de prise entre une position où une étiquette est prélevée sur les moyens de logement et une position où l'étiquette sort des moyens de distribution.

54. Appareil selon la revendication 53, **caractérisé en ce que** la surface de retenue (59) présente une structure perméable ou des trous adéquats reliés à des moyens pour exercer une pression négative, ou une pression inférieure à la pression atmosphérique, de manière à retenir les étiquettes (12) sur la surface de retenue (59) par aspiration.

55. Appareil selon les revendications 53 ou 54, **caractérisé en ce que** les moyens pour entraîner les moyens de prise, consistent en un élément tournant (60) positionné entre l'extrémité de sortie (54a) des moyens de logement (54) et les moyens (26) pour distribuer les étiquettes (16).

56. Appareil selon la revendication 55, **caractérisé en ce qu'**il comprend des moyens d'entraînement (62) pour déplacer l'élément de prise (58) des étiquettes (16) entre une position radiale développée vers l'extérieur, dans laquelle les étiquettes (16) sont prélevées sur les moyens de logement et sortent des moyens de distribution, et une position radiale rentrée vers l'intérieur, dans laquelle les étiquettes (16) sont transportées.

57. Appareil selon la revendication 56, **caractérisé en ce que** les moyens pour déplacer l'élément de prise entre une position développée et une position de transfert rentrée, comprennent un profil de came (62) qui agit en collaboration avec une partie correspondante (64) de l'élément de prise (58) des étiquettes (16).

58. Appareil selon la revendication 57, **caractérisé en ce qu'**il comprend des moyens (66) pour déplacer le profil de came (62) entre une position extérieure développée radialement et une position de transfert.

59. Appareil selon l'une quelconque des revendications précédentes 52 à 58, **caractérisé en ce que** les étiquettes sortent des moyens de distribution (26) des étiquettes quand ces derniers se déplacent.

60. Appareil selon l'une quelconque des revendications précédentes 52 à 59, **caractérisé en ce que** les moyens pour loger les étiquettes (16), comprennent une pluralité de tubes (54) pour loger les étiquettes (16), chaque tube étant conçu pour faire sortir des étiquettes correspondantes (16).

61. Utilisation d'un appareil selon l'une quelconque des revendications précédentes dans une machine pour emballer un produit alimentaire pâteux, liquide ou semi-liquide, et notamment, pour emballer le fromage à tartiner.

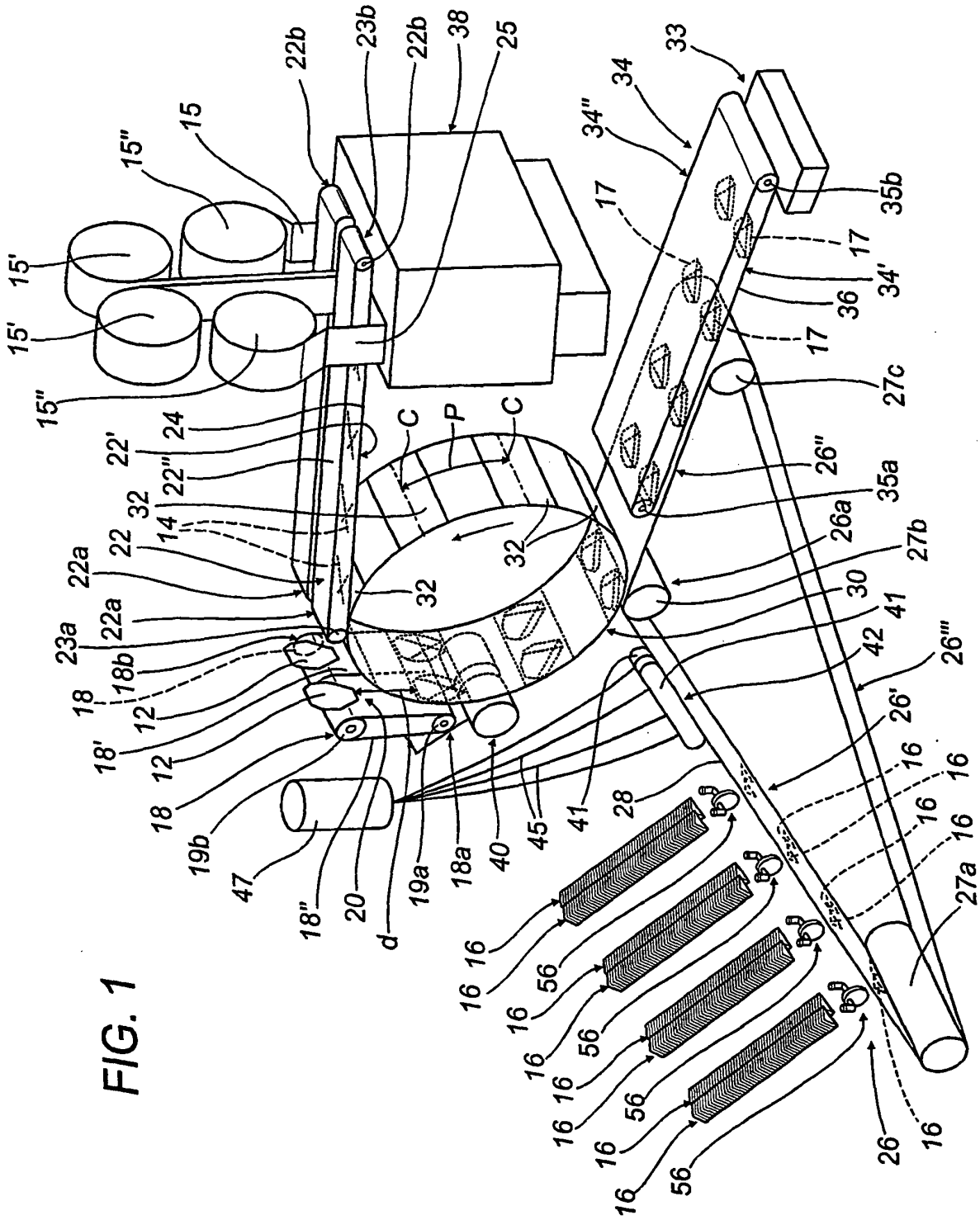

15'
15'
15''
15''
15
22b
23b
22b
38
25
33
34
34''
17
35b
17
34'
36
17
27c
26''
35a
26a
27b
30
41
42
26'''
26'
16
16
16
16
16
16
16
27a
26
16
16
16
16
16
16
16
16
56
56
56
56
28
41
45
40
18a
19a
d
20
18''
47
19b
18
12
18'
12
18
18b
12
23a
22a
22a
22
22a
32
14
32
22''
22'
24
C
P
C
32
32

FIG. 1

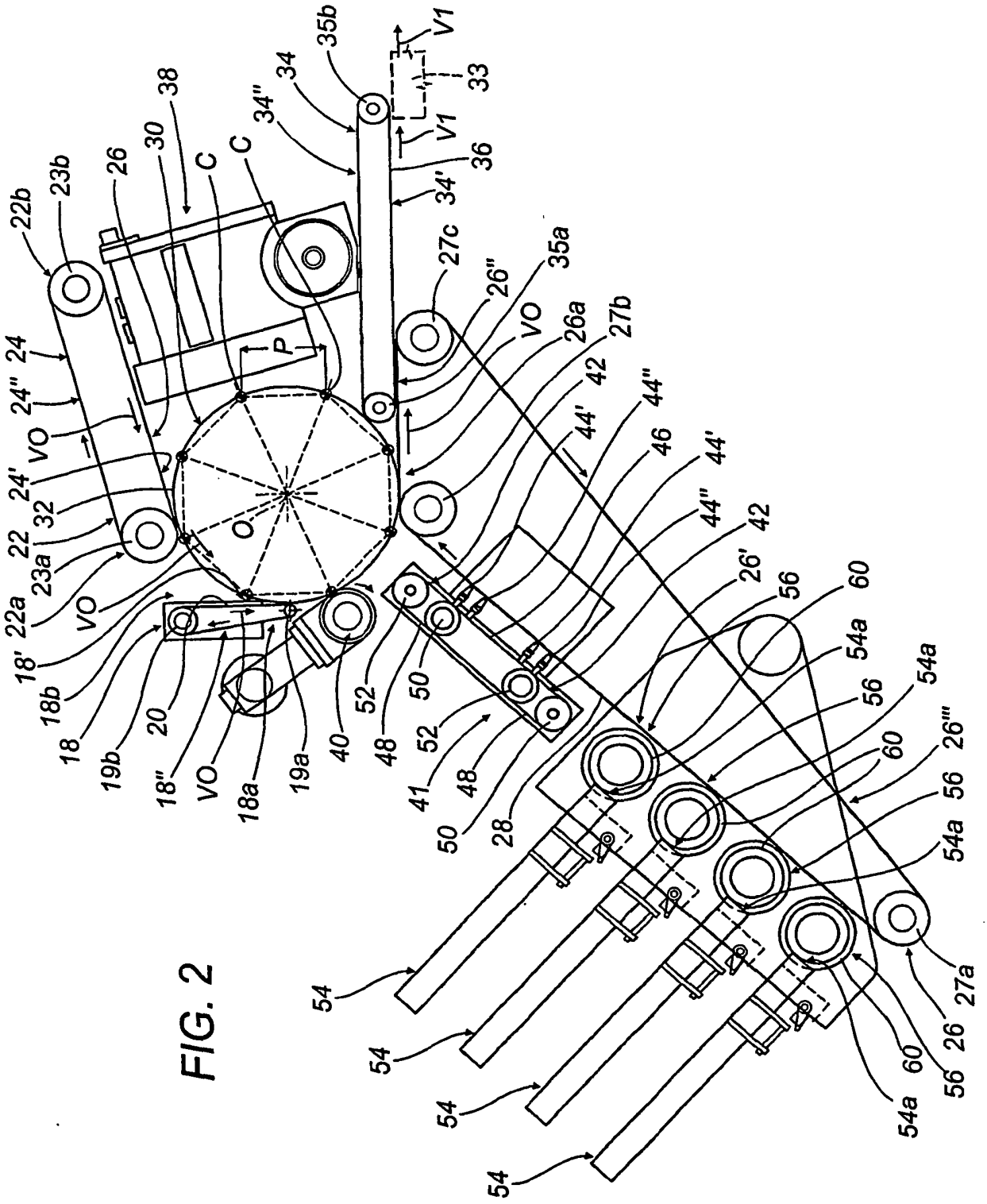

22b
23b
26
30
38
C
C
34"
34
35b
V1
33
V1
36
34'
27c
26"
35a
VO
26a
27b
42
44"
46
44'
44"
42
26'
56
60
54a
54a
56
60
26'''
56
54a
60
56
26
27a
54a
54
54
54
54
50
28
48
52
41
50
48
52
40
19a
18a
VO
18"
20
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VO
18'
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23a
22
32
24'
VO
24"
24
P
O

FIG. 2

FIG. 5

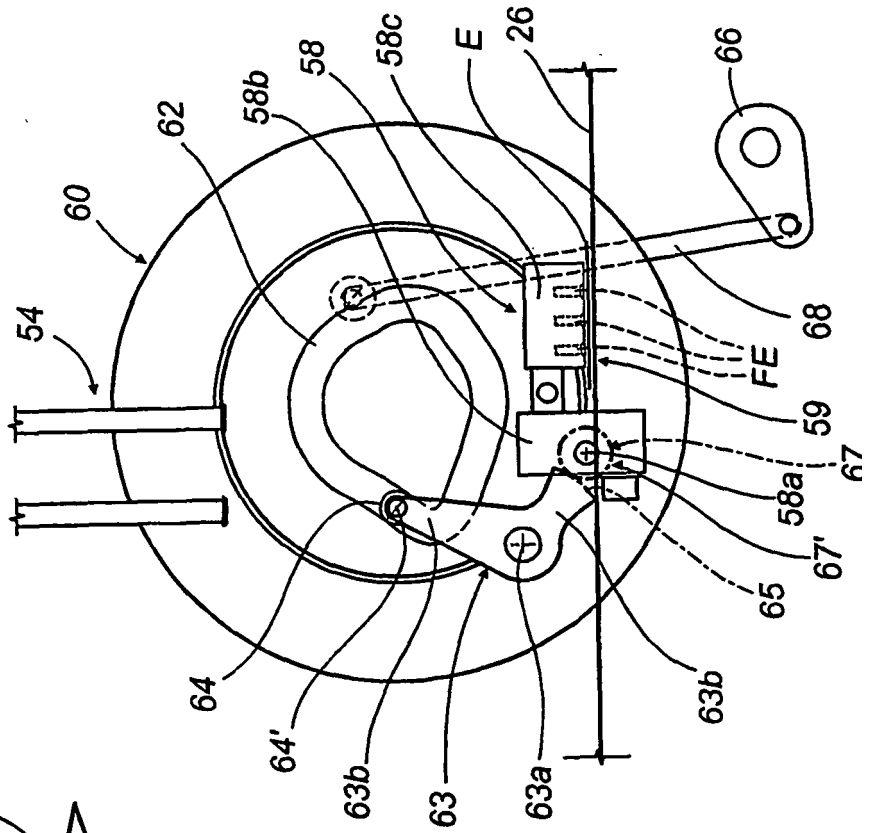
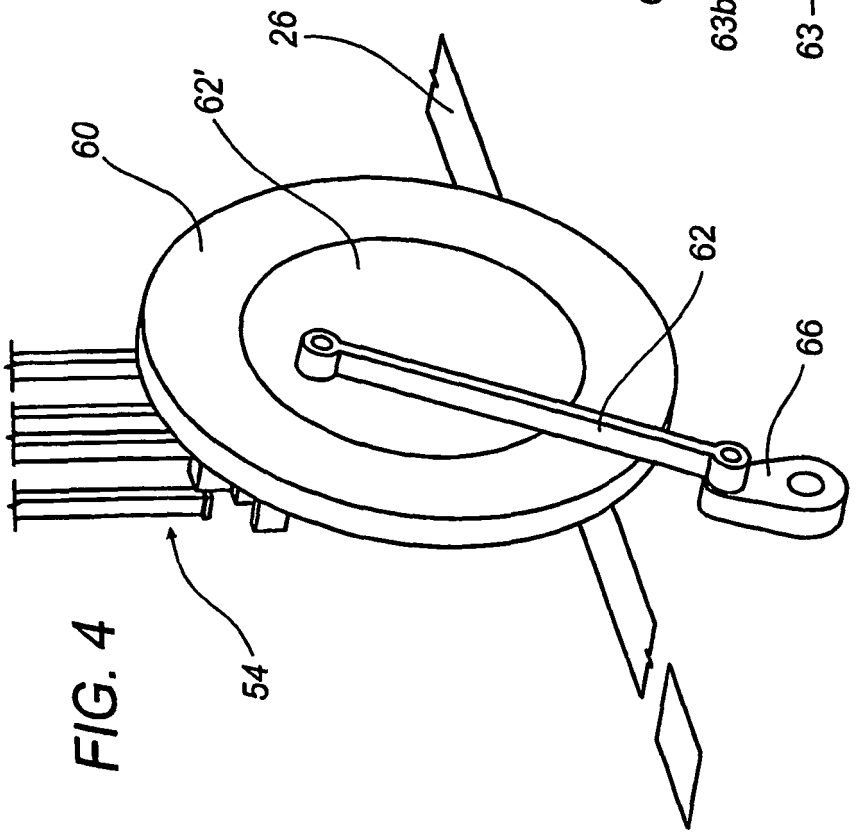

60
62
58b
58
58c
E
26
66
54
68
FE
59
67
58a
67'
65
64
64'
63b
63
63a
63b

FIG. 4


26
62'
60
62
66
54

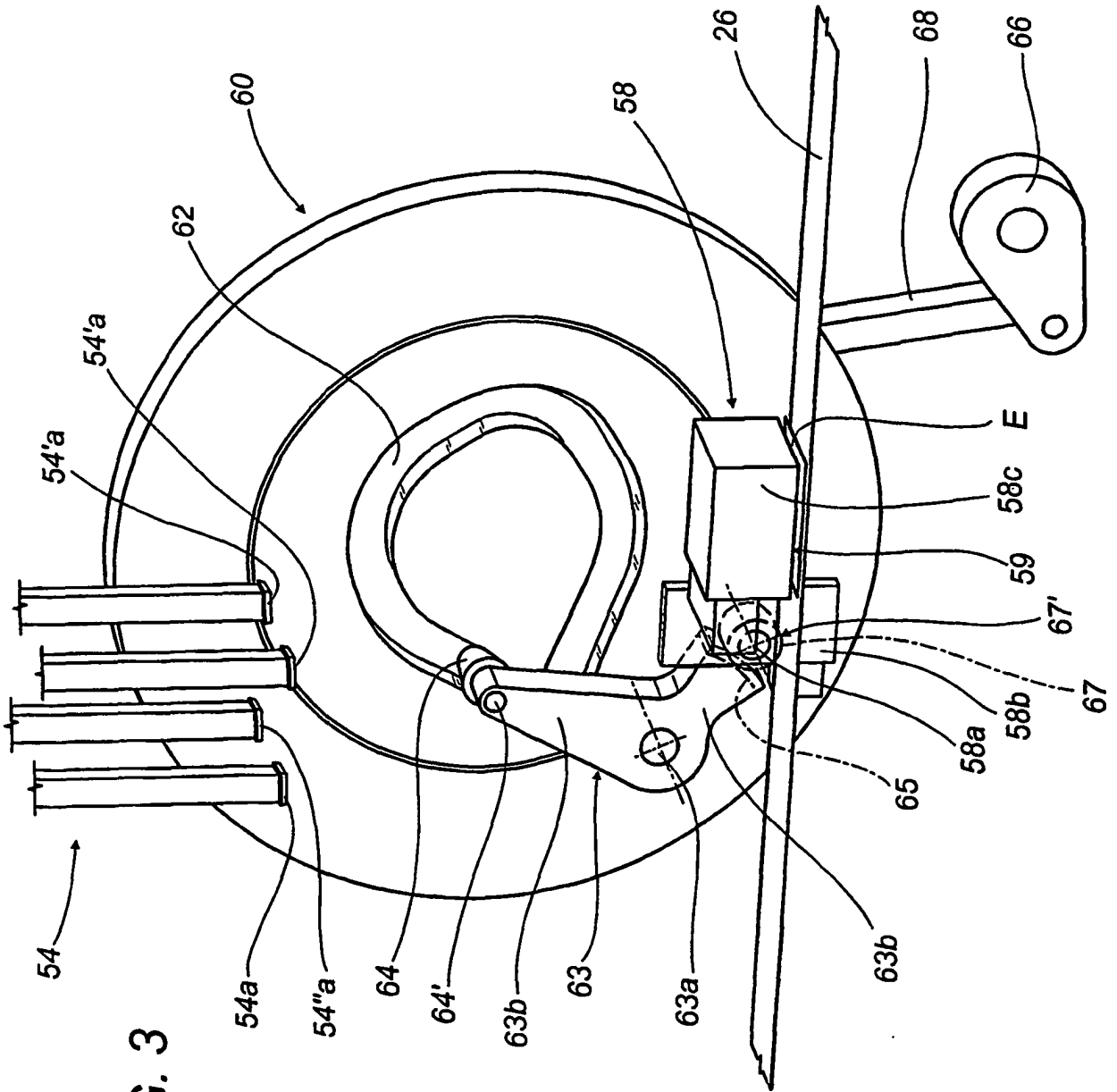

60
62
54'a
54'a
58
26
68
66
E
58c
59
67'
67
58b
58a
65
63b
54
54a
54"a
64
64'
63b
63
63a

FIG. 3

FIG. 6

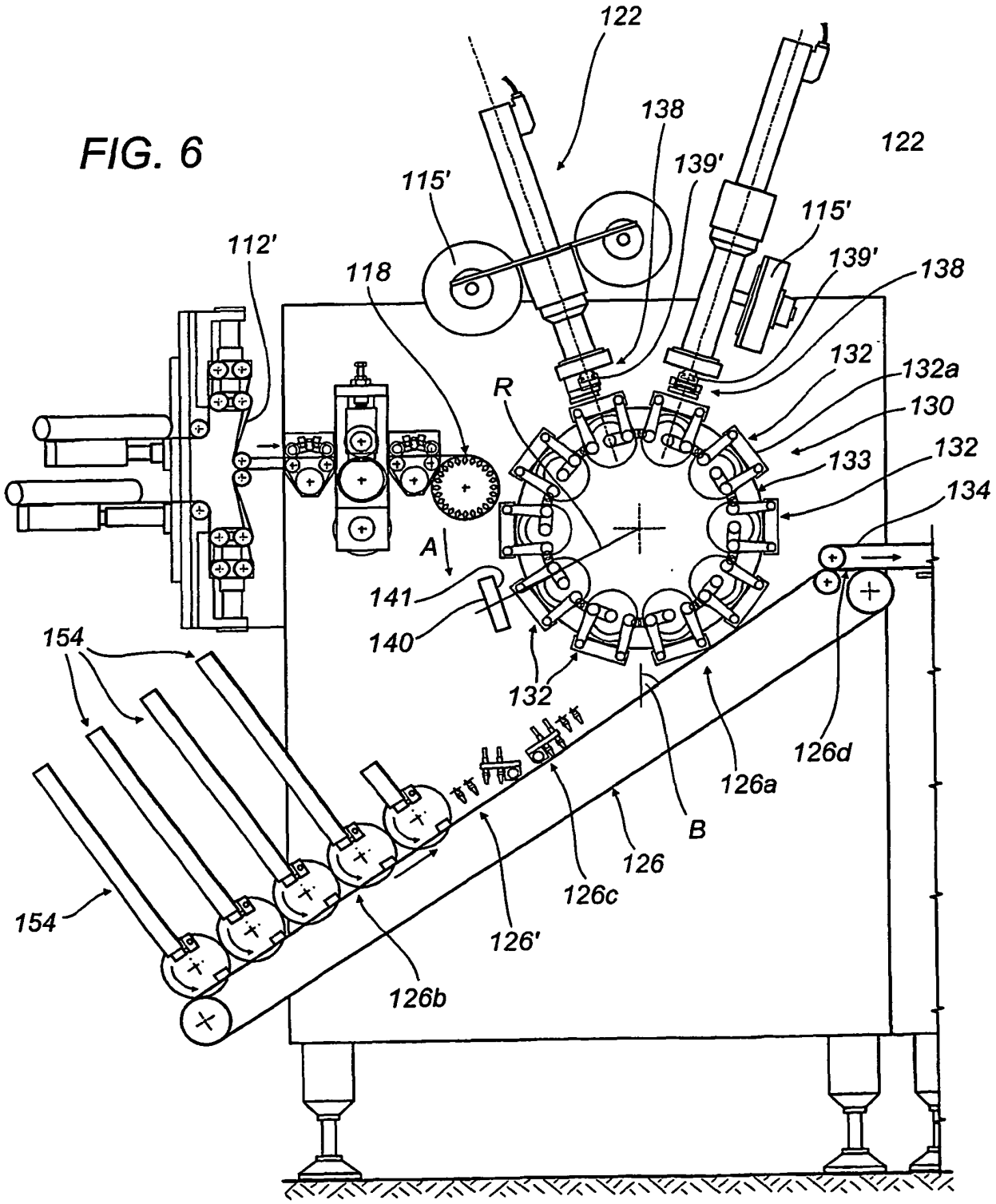

122
138
139'
115'
122
115'
112'
118
139'
138
132
132a
R
130
133
132
134
A
141
140
154
132
126d
126a
B
126
126c
154
126'
126b

FIG. 7

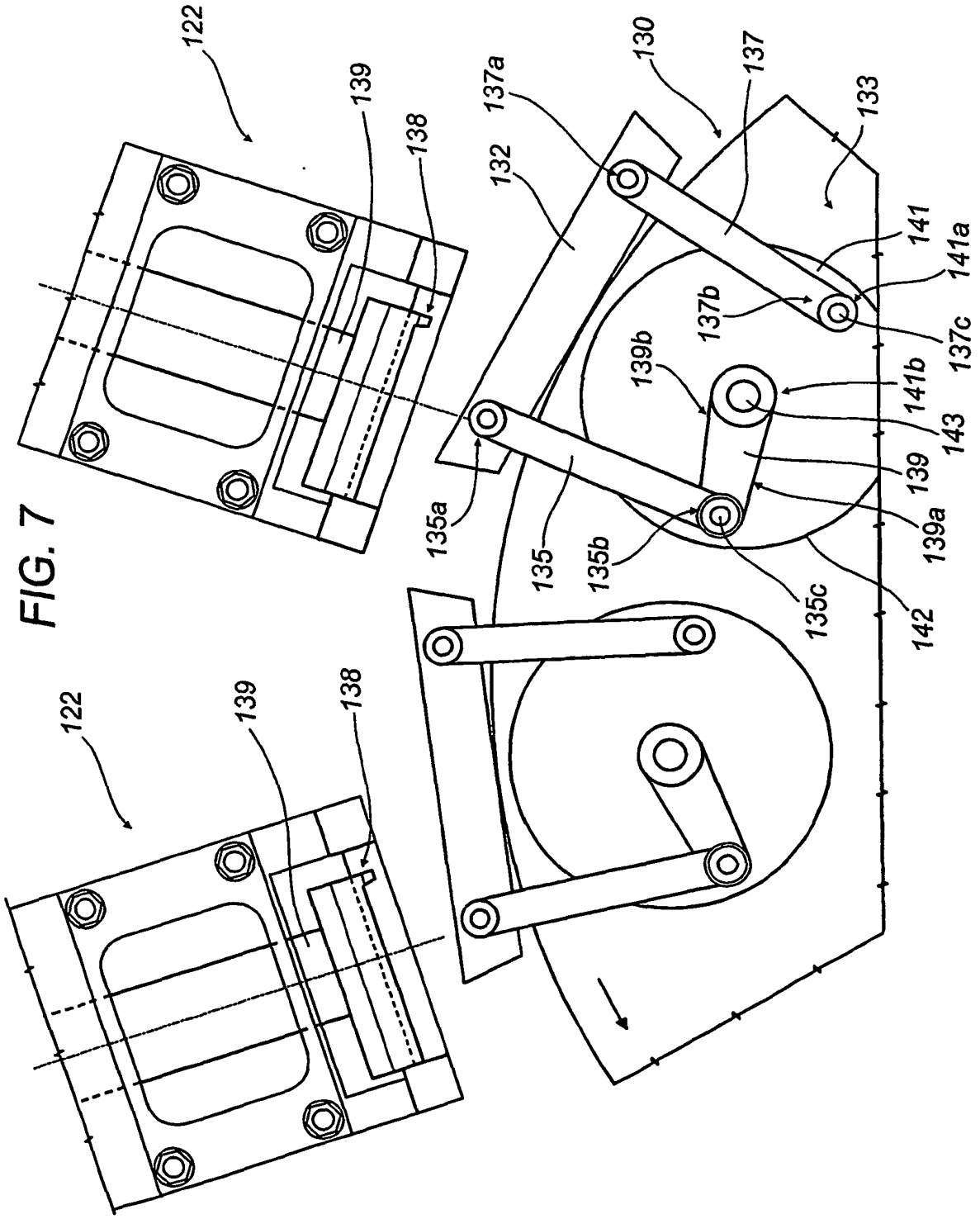

122
139
138
137a
130
137
133
132
141
141a
137b
137c
139b
141b
143
139
139a
135a
135
135b
135c
142
122
139
138

FIG. 8

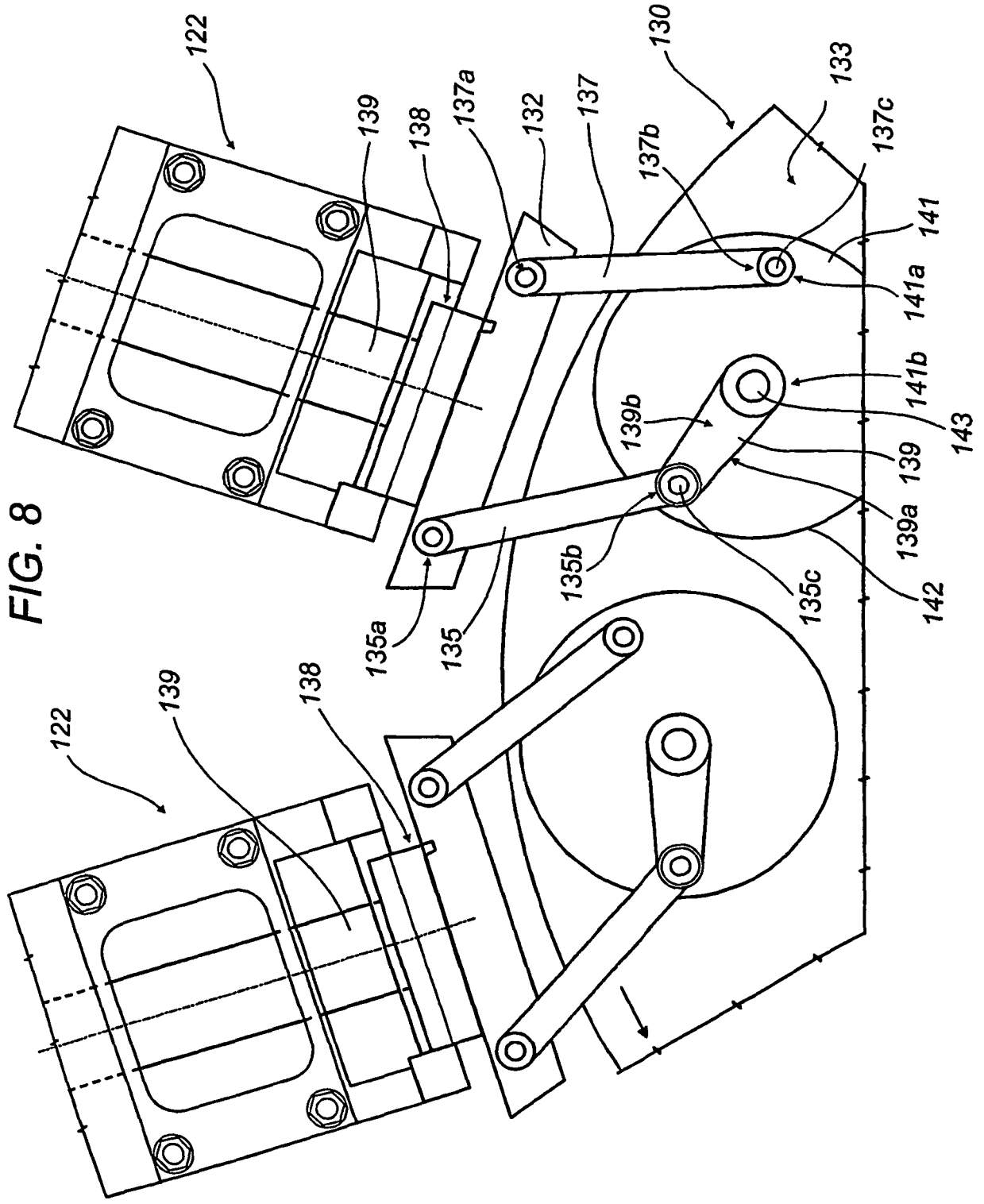

122
139
138
137a
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133
137c
137b
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143
139b
139
139a
135b
135c
142
135a
135
122
139
138

FIG. 9

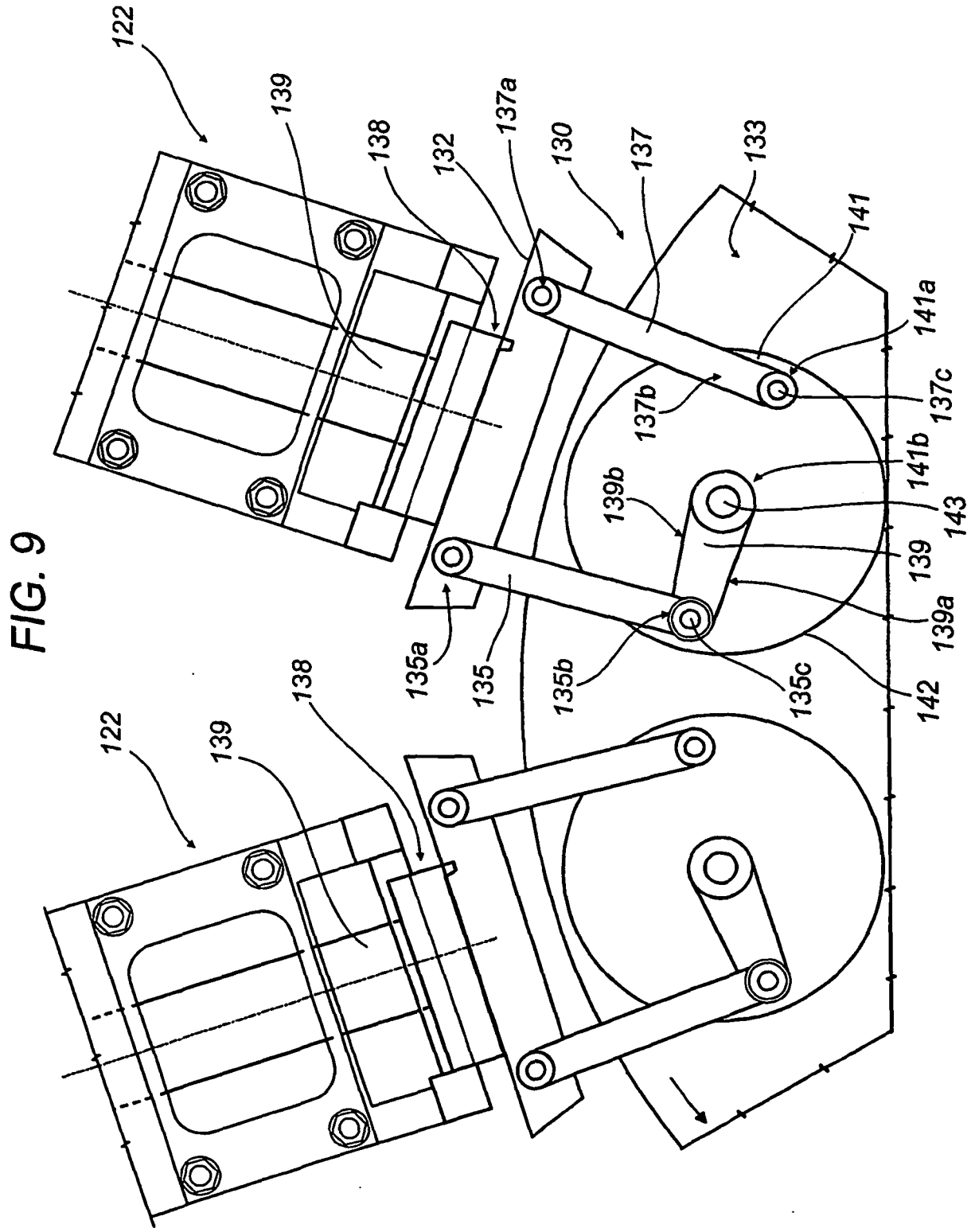

122
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141a
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141b
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135b
135
135a
122
139
138

FIG. 10

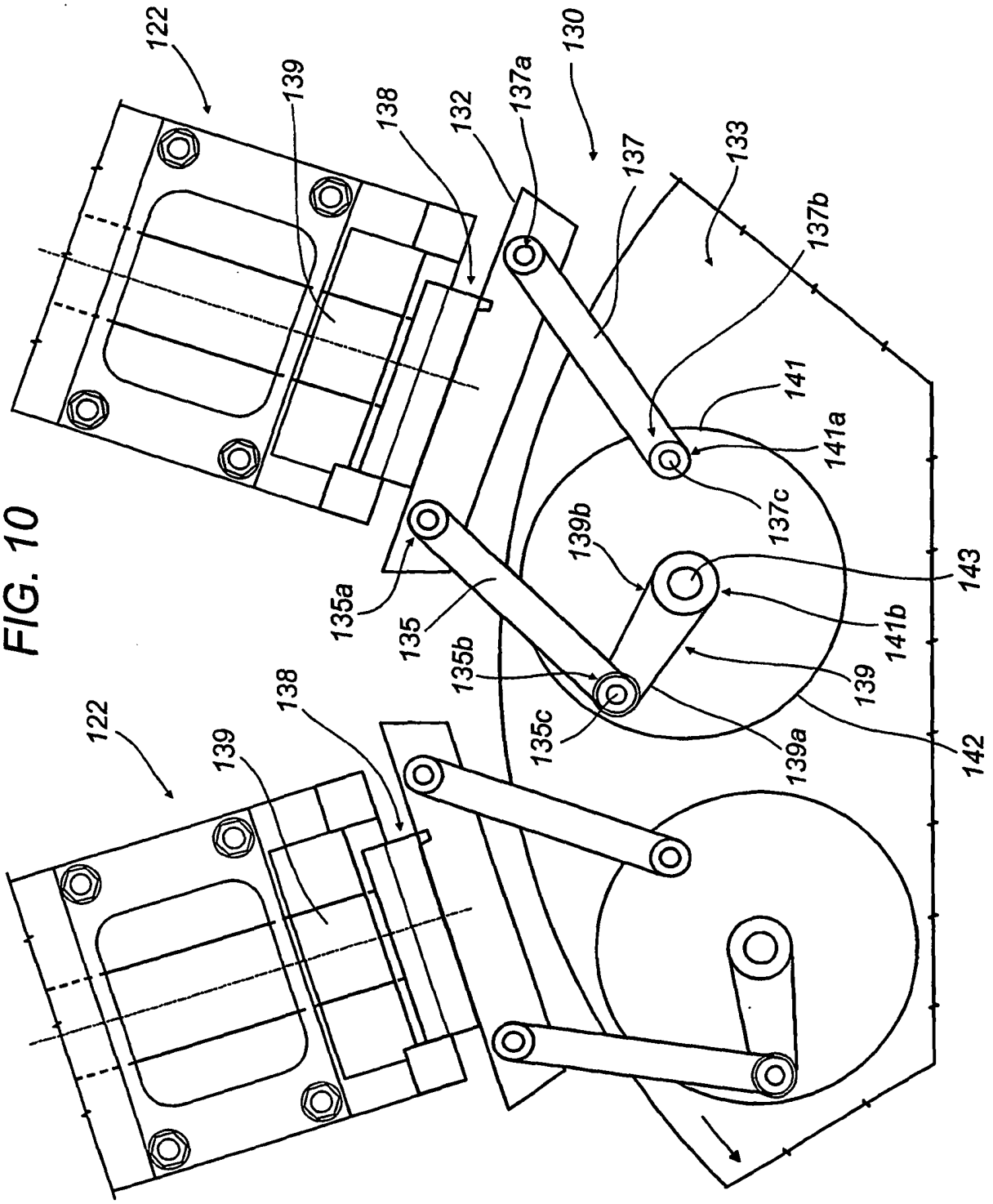
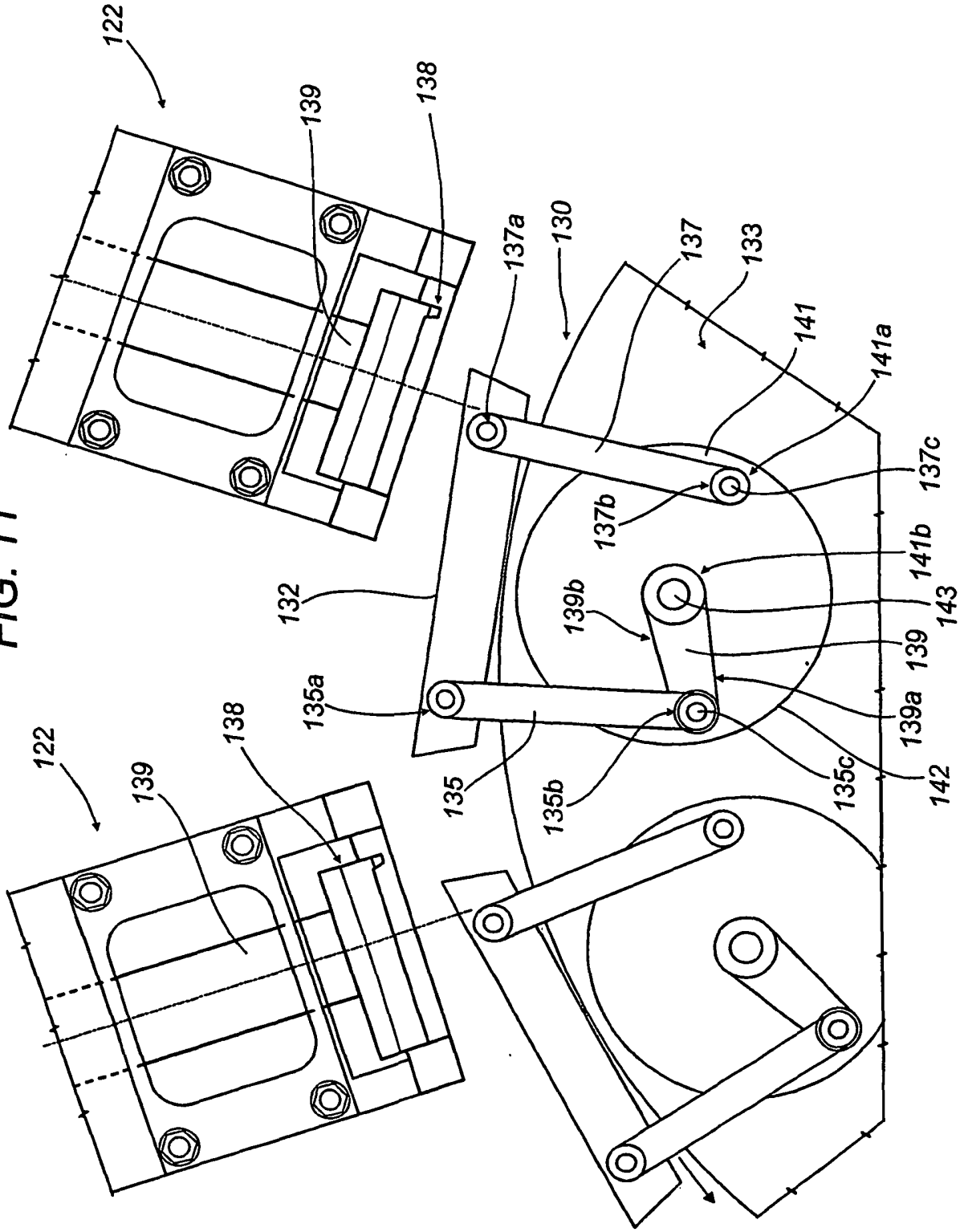

122
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138
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137a
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137b
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141a
137c
139b
143
141b
139
142
139a
135c
135b
135
135a
122
139
138

FIG. 11


122
139
138
137a
130
137
133
141
141a
137c
137b
141b
143
132
139b
139
139a
135a
135
135b
135c
142

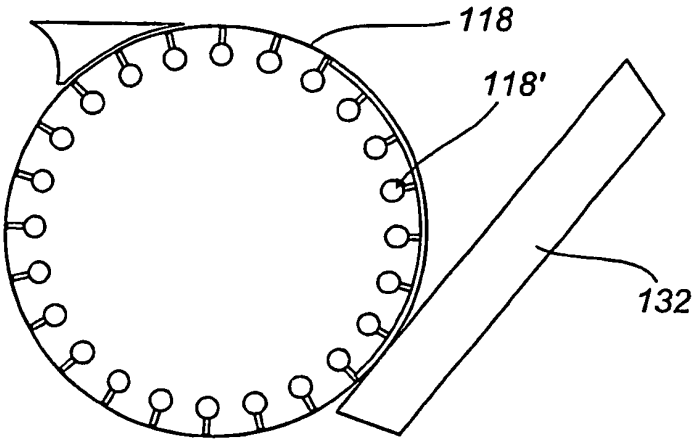


FIG. 12

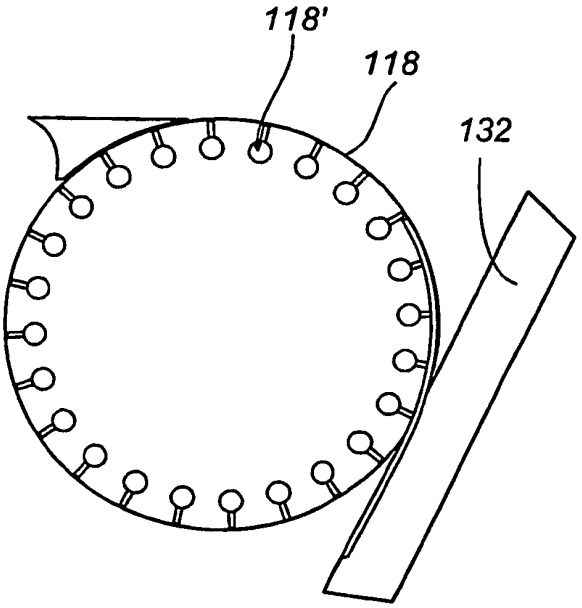


FIG. 13

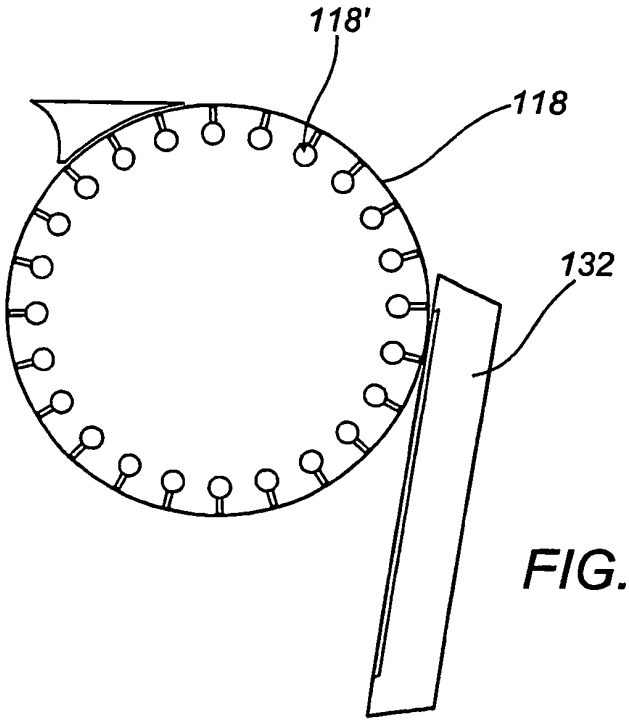


FIG. 14

FIG. 16

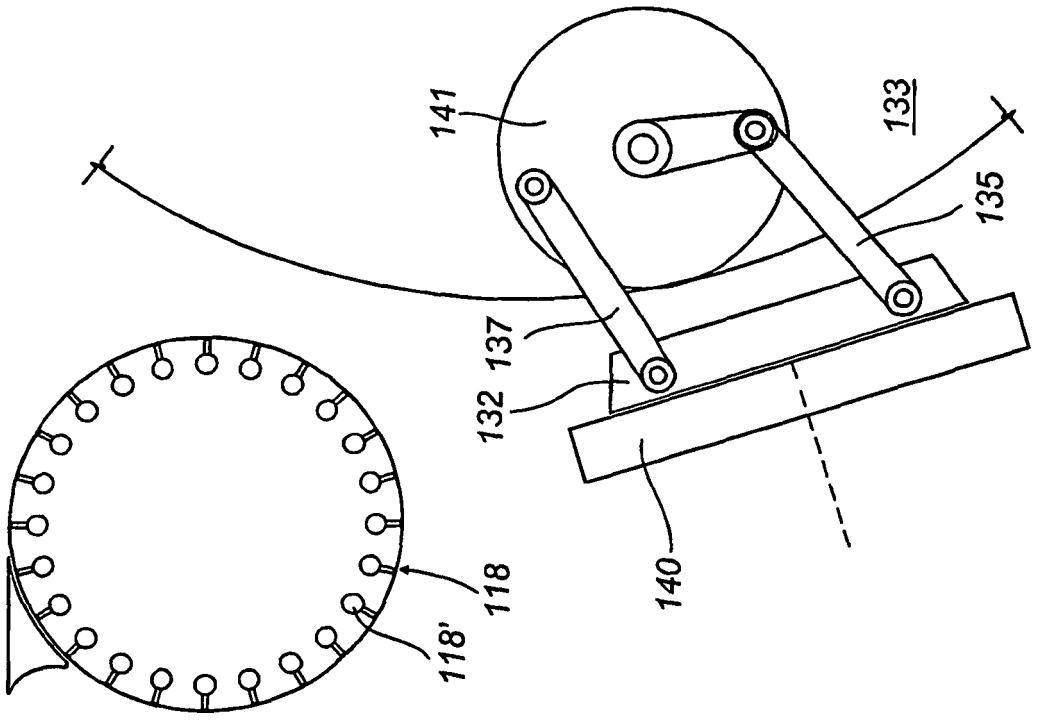


FIG. 15

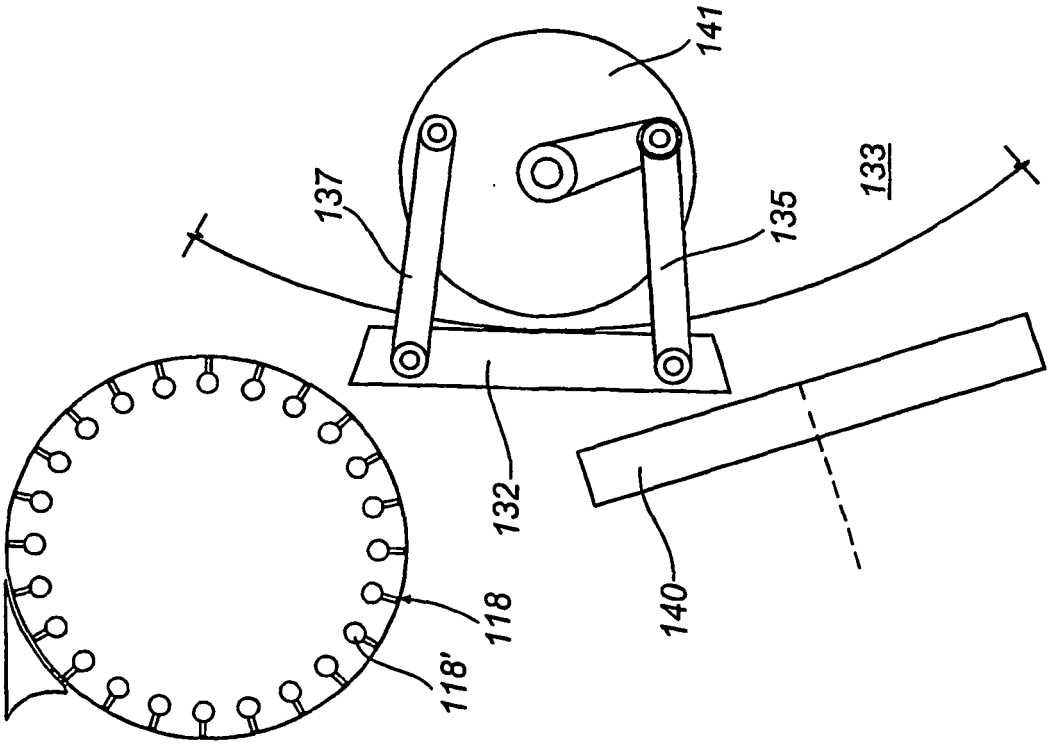


FIG. 18

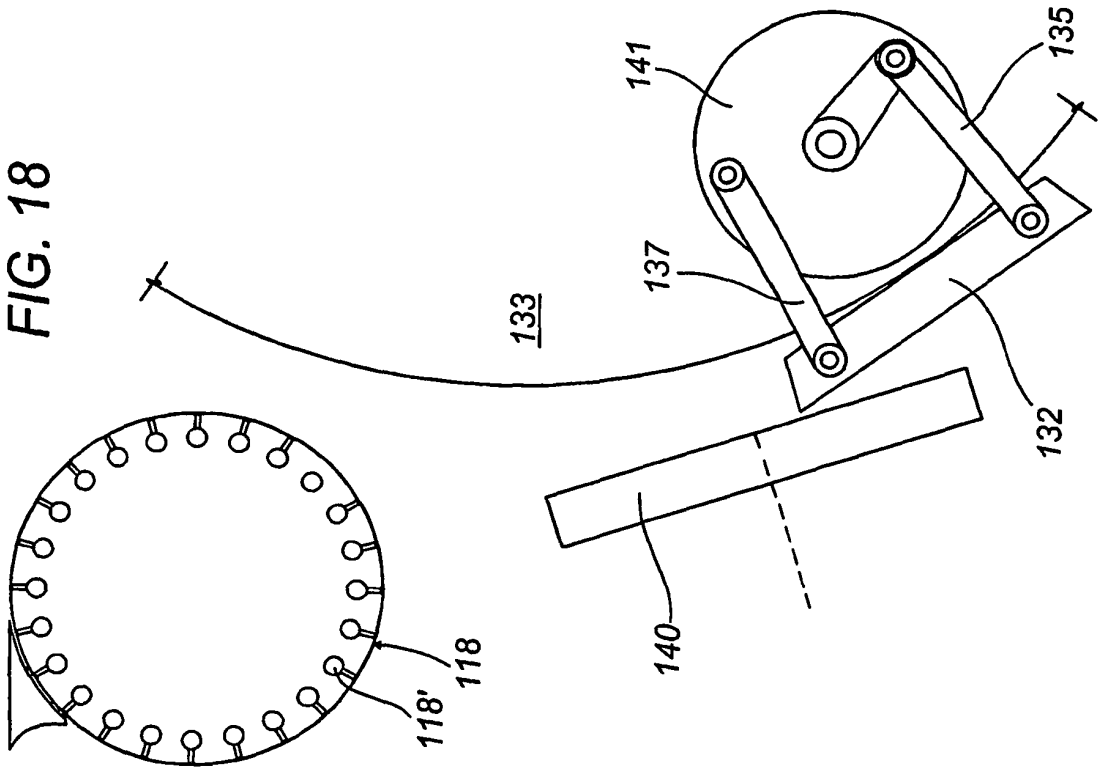
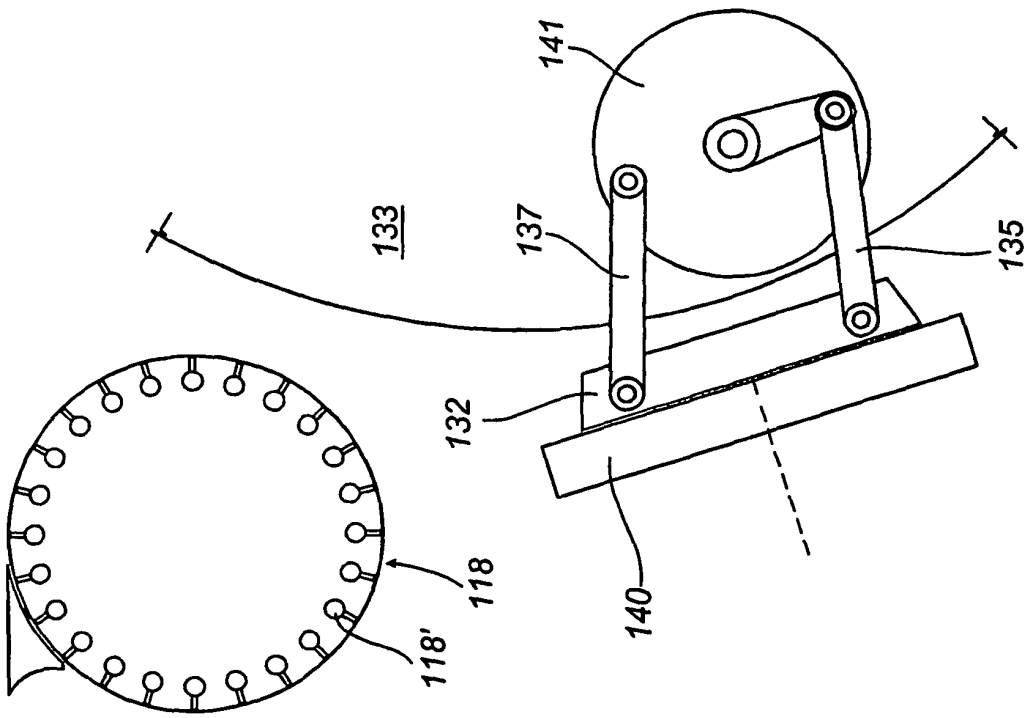


FIG. 17



REFERENCES CITED IN THE DESCRIPTION

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- IT BO20000037 A **[0048]**