

(19) **DANMARK**



Patent- og
Varemærkestyrelsen

(12)

Oversættelse af europæisk patentskrift

(10) **DK/EP 3024733 T3**

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- (51) Int.Cl.: *B 65 B 11/52 (2006.01)* *B 65 B 5/02 (2006.01)* *B 65 B 7/16 (2006.01)*
B 65 B 9/04 (2006.01) *B 65 B 31/02 (2006.01)* *B 65 B 31/04 (2006.01)*
B 65 B 47/04 (2006.01) *B 65 B 47/06 (2006.01)* *B 65 B 51/06 (2006.01)*
B 65 B 57/04 (2006.01) *B 65 B 61/06 (2006.01)*
- (45) Oversættelsen bekendtgjort den: **2018-08-20**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2018-05-09**
- (86) Europæisk ansøgning nr.: **14741868.5**
- (86) Europæisk indleveringsdag: **2014-07-21**
- (87) Den europæiske ansøgnings publiceringsdag: **2016-06-01**
- (86) International ansøgning nr.: **EP2014065588**
- (87) Internationalt publikationsnr.: **WO2015011076**
- (30) Prioritet: **2013-07-24 ES 201331133**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
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- (54) Benævnelse: **Modificeret atmosfære-, krympe- eller vakuumpakkemaskine samt fremgangsmåde**
- (56) Fremdragne publikationer:
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DESCRIPTION

TECHNICAL FIELD

[0001] The present invention relates to a method and a machine, particularly a forming machine adapted for packaging products in a modified atmosphere (also known as MAP packaging), vacuum packaging products in a type of skin (also known as skin packaging) or vacuum packaging products.

PRIOR ART

[0002] Vacuum or modified atmosphere packaging methods and packaging machines are known.

[0003] Known packaging machines comprise first film feed means, a thermoforming station where containers are made in the first film inside which the product to be packaged will be introduced in a later step, second film feed means, and a sealing station that is supplied with both films and where the vacuum is formed or the gas is introduced in the container containing the product to be packaged. Subsequently in the sealing station, the second film is sealed to the first film such that the package is obtained. In a later step, cutting means comprised in the machine cut the films longitudinally and transversely, separating the packages that have been formed.

[0004] Generally, as described in US2005/0173289A1, a packaging machine of this type comprises chains guiding the movement of the first film, said first film being fixed to said chains laterally, such that it remains taut.

DISCLOSURE OF THE INVENTION

[0005] The object of the invention is to provide a modified atmosphere, skin or vacuum packaging machine and packaging method as described below.

[0006] The modified atmosphere or vacuum packaging machine according to the invention comprises first feed means adapted for feeding a first film to the machine, second feed means adapted for feeding a second film to the machine, a sealing station where the vacuum is formed and/or the modified atmosphere is introduced between both films and the second film is sealed to the first film to obtain a package, and displacement means adapted for moving the first film in a driving direction.

[0007] The displacement means are configured for moving at least the first film a driving

distance from an initial position, holding down and driving at least the first film in the driving direction to an end position, said displacement means being configured for subsequently returning to the initial position when the machine is in operating mode.

[0008] In addition, the modified atmosphere, skin or vacuum packaging method according to the invention comprises the following steps:

- feeding a first film to the machine through first feed means,
- positioning a second film on the first film after placing the product to be packaged on the first film,
- forming a vacuum and/or introducing the modified atmosphere between both films,

[0009] Displacement means hold down and drive the first film a driving distance from an initial position to an end position through the preceding steps when the machine is in displacement mode, subsequently returning to the initial position when the machine is in an operating position.

[0010] A packaging machine and method that can reduce film waste produced during the packaging process to a minimum are obtained. Both the method and the machine are more efficient and at the same time cleaner than any known in the state of the art because they produce virtually no discarded film, using almost all the film. A packaging machine and a packaging method that have less of an impact on the environment are obtained. Furthermore, it allows filling any type of skin package, including those packages containing a product that projects above said package.

[0011] These and other advantages and features of the invention will become evident in view of the drawings and the detailed description of the invention.

DESCRIPTION OF THE DRAWINGS

[0012]

Figure 1 shows a side view of a skin packaging machine according to the invention.

Figure 2 shows a perspective view of the packaging machine shown in Figure 1.

Figure 3 shows a detailed view of the machine shown in Figure 1, in which a forming station and displacement means of the machine are shown in detail.

Figure 4 shows a detailed view of the machine shown in Figure 1, in which a pre-sealing station, a sealing station, cutting means and displacement means of the machine are shown in detail.

Figure 5 shows a top view of a first film once it has gone through the thermoforming step and the punching step.

DETAILED DISCLOSURE OF THE INVENTION

[0013] The packaging machine 1 according to the invention can be a modified atmosphere packaging machine, also known as a MAP packaging machine, which wraps the product to be packaged in a mixture of gases in the package, such that said mixture meets the specific ventilation needs of the packaged product, or it can be a vacuum packaging machine, or a skin packaging machine, being able to package both products whose height is less than the height of a tray where the product is placed and products projecting above the tray.

[0014] Figure 1 schematically shows a skin packaging machine 1 according to the invention.

[0015] The machine 1 comprises first feed means 2 adapted for feeding a first film 30 to the machine 1, a thermoforming station 4 where at least one container 32 is made in the first film 30 inside which the product to be packaged is introduced in a filling station, second feed means 3 adapted for feeding a second film 31 to the packaging machine 1, and a sealing station 7 where a vacuum is formed and the second film 31 is sealed to the first film 30 to obtain a package 34. The vacuum allows adjusting the second film 31 to the shape of the product placed in the formed area 32, obtaining a skin-type package 34.

[0016] In addition, one embodiment of the skin packaging method according to the invention comprises the following steps:

- feeding the first film 30 to the machine 1 through the first feed means 2,
- positioning the second film 31 on the first film 30 after placing the product to be packaged on the first film 30,
- forming the vacuum between both films 30 and 31,
- sealing both films 30 and 31, obtaining a package 34, and
- separating the package 34.

[0017] When the machine 1 is in any of the preceding steps, it is in operating mode where displacement means 20 and 40 hold down the first film 30, retaining it in an initial position. When the machine is in displacement mode, the displacement means 20 and 40 hold down the first film 30 and pull it in the driving direction a driving distance to an end position. At said end position, the displacement means 20 and 40 immobilize the first film 30, while the displacement means 20 and 40 return to the initial position.

[0018] The feed means 2 comprise at least one reel and unwinding means driving the first film

30 to the thermoforming station 4. Said feed means 2 are known in the state of the art so they will not be described below.

[0019] In addition, films 30 and 31 can be made of any type of plastic known for MAP, vacuum or skin packaging applications.

[0020] In addition, the thermoforming station 4 comprises a male mold 5 and a female mold 6 adapted for obtaining the geometric shape of the container 32 and heating means not depicted in the drawings that heat the first film 30 in order to carry out the thermoforming process. Other thermoforming stations known in the state of the art, for example vacuum or pressure thermoforming stations, can be used in other embodiments. Containers 32 also known as trays are formed in the first film 30 in the thermoforming station 4, and are then separated from one another in areas referred to as non-formed areas 33.

[0021] If a single package 34 is going to be made, a single container 32 will be formed in the first film 30, the non-formed area 33 being the area on the perimeter of said container 32. Said non-formed area 33 will make up the border 35 of the package 34 that is obtained. If a plurality of packages 34 is going to be made, a plurality of containers 32 surrounded by non-formed areas 33 which will respectively form the border 35 of the corresponding package 34 that is obtained will be formed in the thermoforming station 4, reducing waste to a minimum in the first film 30.

[0022] In other non-depicted embodiments, the machine 1 may not include a thermoforming station. In said cases, the product to be packaged rests directly on the first film 30 or on a base that is arranged on said first film 30 and on which the product is supported.

[0023] The machine 1 comprises displacement means 20 and 40 adapted for moving the first film 30 in the driving direction.

[0024] Once the containers 32 are formed in the first film 30, said first film 30 is moved by first displacement means 20 in the driving direction to a filling station, where the product to be packaged is placed on each container 32. Said filling can be done either manually or automatically.

[0025] The first film 30 is then moved by second displacement means 40 to the sealing station 7. At the same time, the second feed means 3 feed the second film 31 to said sealing station 7. Said sealing station 7 comprises a top mold 8 and a bottom mold 9, heating means (not depicted in the drawings) adapted for heating the top mold 8, vacuum means (not depicted in the drawings) adapted for creating the vacuum, and aeration means (not shown in the drawings) acting on the top mold 8. When the second film 31 enters the sealing station 7, a vacuum is applied to the top mold 8 such that said second film 31 is deformed towards the top mold 8 (which is previously heated), where said second film 31 is heated. At the same time, the first film 30 is positioned on the bottom mold 9. A vacuum is applied from the bottom mold 9, and then it is aerated from the top mold 8 such that the second film 31 is sealed to the first film

30 along the entire contact surface, deforming said second film 31 due to the effect of heating and adapting to the shape of the product placed in the container 31, such that a plurality of packages 34 are formed, that is, as many packages 34 are formed as containers 32 were made in the thermoforming station 4, such containers 34 being fixed to one another through the non-formed areas 33 corresponding with the border 35 of the package 34. In a later step, said packages 34 are separated from one another through the borders 35.

[0026] If the product to be packaged projects above the non-formed area 33 once the product is introduced, the second film 31 must be heated before being introduced in the sealing station 7 in order to adapt to the shape of the product to be packaged when it is positioned on the first film 30. To that end, the machine 1 further comprises a heating station where the second film 31 is heated before being introduced in the sealing station 7 to make the second film 31 more ductile. The machine 1 comprises auxiliary displacement means 53 keeping the second film 31 clamped as it moves through the heating station, preventing it from shrinking while it is heated. Said auxiliary displacement means 53 release the second film 31 when it comes out of the heating station. Said release occurs close to the area where both films 30 and 31 come into contact with one another for the first time.

[0027] The machine 1 further comprises pre-sealing means 52 arranged before the sealing station 7. Particularly, said pre-sealing means 52 are arranged where first contact between both films 30 and 31 occurs, i.e., where they leave the auxiliary displacement means 53. Said pre-sealing means 52 are adapted for sealing the second film 31 to the first film 30 longitudinally at discrete points. Sealing is preferably performed by heat sealing, although in other embodiments sealing could be performed by high-frequency welding or by other known sealing methods. Therefore, by keeping the films 30 and 31 aligned with one another by means of sealing at certain points from the moment both films 30 and 31 enter the sealing station, the second film 31 adapts to the product to be packaged better when products whose height exceeds the height of the corresponding container 32 are packaged. Once in the sealing station 7, the vacuum and sealing process is similar to that previously described.

[0028] In a preferred embodiment, the auxiliary displacement means 53 comprise a belt 54, guide rollers 55 moving the belt 54 and a counter-belt 56 holding the second film 32, clamping it against the belt 54. The belt 54 moves in synchronization with the displacement means 20 and 40 of the machine 1. Furthermore, the pre-sealing means 52 comprise a first gear wheel 57 coupled to a guide roller 55 of the auxiliary displacement means 53 and a second wheel 58 arranged below the first film 30. The second wheel 58 can be a gear wheel or a smooth welding roller. The first wheel 57 is arranged in the guide roller 55 arranged closest to the first film 30. The teeth of the first wheel 57 go through the belt 54 which has holes in it, being supported on the second wheel 58, thereby pressing the second film 31 against the first film 30. Said second wheel 58 is heated, both films 30 and 31 being welded to one another at discrete points as both wheels 57 and 58 rotate, moving both films 30 and 31 towards the sealing station 7.

[0029] In other embodiments, the auxiliary displacement means can comprise a chain, clamps

which fix the taut second film 31 to the chain and gear wheels adapted for closing the clamps before entering the heating station and for opening said clamps after exiting the heating station. The clamps can be covered with a ductile material which holds the second film 31 without leaving marks.

[0030] The pre-sealing means comprise a gear wheel arranged below the first film 30 such that the teeth of the gear wheel of the auxiliary displacement means arranged closest to the first film 30 are supported on the respective teeth of the gear wheel arranged below the first film 30, thereby pressing the second film 31 against the first film 30, both films 30 and 31 being welded to one another at discrete points as both wheels rotate, moving both films 30 and 31 towards the sealing station 7.

[0031] In other embodiments, gear wheels are not necessary, the pre-sealing being performed as both films 30 and 31 move forward using any known conventional welding means.

[0032] In addition, between the thermoforming station 4 and the sealing station 7, the packaging machine 1 comprises bearing means 10 for the first film 30 adapted for longitudinally bearing said first film 30.

[0033] In a preferred embodiment, the bearing means 10 comprise at least one longitudinal guide 11 on which the first film 30 is supported. The first film 30 is supported on said longitudinal guide 11 on the non-formed area 33 comprised between two consecutive containers 32. For every N containers 32 formed in the first film 30 transverse to the forward movement, N+1 non-formed areas 33 arranged between two consecutive containers 32 are formed, therefore N+1 longitudinal guides being arranged fixed to a bearing structure 50 of the machine 1 on which the first film 30 is supported.

[0034] In other embodiments, particularly when thermoforming a single package 34, the bearing means 10 comprise a bearing surface under the first film 30 on which a bottom of the container 32 is supported. The bearing surface can be a planar surface, for example a table, over which the first film 30 slides with the product placed in the containers 32. In other embodiments, the bearing means 10 comprise a set of transversely arranged rollers (not depicted in the drawings) forming the bearing surface over which the first film 30 slides with products with minimum friction. The set of rollers is necessary when the products to be packaged are heavy in order to prevent high friction during movement. In addition, for said bearing means 10 to adapt to any depth of the containers 32, the height of the bearing surfaces can be adjusted.

[0035] In other embodiments, the bearing means can comprise both the longitudinal guides and the bearing surfaces.

[0036] In other embodiments, the bearing means can comprise a retractable conveyor belt adapted for moving together with the first film 30 with the products introduced therein into the

sealing station 7, the conveyor belt being able to go back out of the sealing station 7 once the first film 30 with the products therein is placed on it.

[0037] In addition, the displacement means 20 and 40 are configured for retaining the first film 30 in a specific position when the machine 1 is in the operating mode, while they are adapted for driving the first film 30 in the driving direction when the machine 1 is in forward movement mode. Said displacement means 20 and 40 are configured for holding down and moving the first film 30 in displacement mode. In addition, the machine 1 is considered to be in the operating mode when it is performing a thermoforming, vacuum, sealing or cutting operation on the package.

[0038] In the embodiment shown in the drawings, the first displacement means 20 are arranged between the thermoforming station 4 and the sealing station 7, particularly between the thermoforming station 4 and the filling station, and the second displacement means 40 are arranged after the sealing station 7.

[0039] In the embodiment shown in the drawings, the first displacement means 20 comprise a first fixed bearing 22 fixed to the bearing structure 50 of the machine 1, between the thermoforming station 4 and the sealing station 7. The second displacement means 40 comprise a second fixed bearing 29 fixed to the bearing structure 50 of the machine 1 after the sealing station 7, a first movable bearing 21 movable in the driving direction with respect to the first fixed bearing 22, and a second movable bearing 28 movable in the driving direction with respect to the second fixed bearing 29.

[0040] Each fixed bearing 22 and 29 has a substantially bridge-shaped geometry. Each fixed bearing 22 and 29 comprises supports 24 and 27 on which the first film 30 is arranged and hold-down plates 23 and 26 configured for pressing the first film 30 against the corresponding support 24 and 27, keeping the first film 30 retained in the specific position when the machine 1 is in operating mode. Each hold-down plate 23 and 26 is arranged facing the corresponding support 24 and 27, the first film 30 being arranged between both.

[0041] Each movable bearing 21 and 28 has a substantially bridge-shaped geometry. Each movable bearing 21 and 28 comprises supports 44 and 47 on which the first film 30 is arranged and hold-down plates 43 and 46 configured for pressing the first film 30 against the corresponding support 44 and 47. Each hold-down plate 43 and 46 is arranged facing the corresponding support 44 and 47, the first film 30 being arranged between both. Each movable bearing 21 and 28 comprises a vertical actuation drive (not depicted) acting on the corresponding hold-down plate 43 and 46, moving said hold-down plate 43 and 46 vertically with respect to the first film 30.

[0042] Said drive is preferably a pneumatic cylinder.

[0043] The displacement means 20 and 40 further comprise guides 60 and 62 and a longitudinal actuation drive acting on the corresponding movable bearings 21 and 28, moving

them in the driving direction through the guides. Both the guides and the drive are arranged below the first film 30. The drive can be pneumatic, hydraulic or any other type known in the state of the art. The displacement means 20 and 40 act in a synchronized manner, moving the first film 30 forward intermittently. When the machine 1 operates in the operating mode, the movable bearings 21 and 28 are arranged in the position furthest away from the fixed bearings 22 and 29, the vertical drives corresponding to the hold-down plates 23 and 26 of the fixed bearings 22 and 29 are activated, pressing the hold-down plates 23 and 26 against the first film 30, while the hold-down plates 43 and 46 of the movable bearings 21 and 28 are not active and are therefore separated from the first film 30. The package thermoforming, sealing, vacuum and cutting operation will be performed in that position. In order to move the first film 30, once the operating mode ends, the vertical drives corresponding to the hold-down plates 43 and 46 of the movable bearings 21 and 28 are activated, applying pressure on the first film 30 against the corresponding supports 44 and 47; the vertical drives corresponding to the hold-down plates 23 and 26 of the fixed bearings 22 and 29 are deactivated said hold-down plates 23 and 26 being separated from the first film 30; and the longitudinal drives are activated, moving the movable bearings 21 and 28 in the driving direction and therefore moving the first film 30 to the next position where the first film 30 is retained again. When the movable bearings 21 and 28 are arranged in the end position, the vertical actuator corresponding to the hold-down plates 43 and 46 of the movable bearings 21 and 28 are deactivated, releasing the first film 30, while the vertical actuator corresponding to the hold-down plates 23 and 26 of the fixed bearings 22 and 29 is activated, pressing said hold-down plates 23 and 26 against the corresponding supports, fixing the first film 30 in the end position. The movable bearings 21 and 28 are moved by the corresponding longitudinal actuator to the initial position, i.e., starting position, repeating the same forward movement cycle.

[0044] The hold-down plates 23, 26, 43 and 46 are always supported on the non-formed areas 33 of the first film 30, not on the containers 32 where the product to be packaged will later be placed. In the embodiment shown in the drawings, the hold-down plates 23, 26, 43 and 46 have an elongated, flat bar-type geometry. Said hold-down plates 23, 26, 43 and 46 are longitudinally aligned, acting on the non-formed areas 33 comprised on the edges of the first film 30.

[0045] In other embodiments, the displacement means 20 could comprise a hold-down plate 23, 26, 43 and 46 arranged longitudinally acting on the non-formed areas 33. So for every N containers 32 transversely formed in the first film 30, N+1 non-formed areas 33 are formed, N+1 hold-down plates 23, 26, 43 and 46 therefore being arranged.

[0046] Furthermore, the hold-down plates 23, 26, 43 and 46 have a length substantially equal to the pitch of the machine 1, pitch of the machine being understood as the distance that the first film 30 moves forward when the machine 1 is in the displacement mode, and a width substantially equal to the width of the corresponding non-formed area 33. If the non-formed area 33 corresponds to a non-formed area 33 between two consecutive containers 32, the width of the hold-down plate will be substantially twice that of the previous one.

[0047] In other embodiments, the hold-down plates 23, 26, 43 and 46 could be arranged transverse to the driving direction.

[0048] In other embodiments, the displacement means 20 can be included in the thermoforming station and in the sealing station, such that the top and bottom molds of each station perform movable bearing functions, the hold-down plates are the top molds, while the bottom molds perform the support function.

[0049] In addition, the machine 1 comprises punching means 15 adapted for punching the first film 30 in a non-formed area 33. The punching operation is performed before said first film 30 reaches the sealing station 7, particularly before the step of introducing the product in the container 31. In the embodiment shown in the drawings, the punching means 15 are comprised in the displacement means 20. The punching means 15 comprise at least one punch coupled to the fixed bearing 22 fixed to the bearing structure 50 of the machine 1 between the thermoforming station 5 and the sealing station 7.

[0050] The punching means 15 make at least one hole 17 and/or a notch 18 in the non-formed area 33. In a preferred embodiment, the punching means 15 make a notch 18 or a hole 17 at the intersection of the non-formed areas 33 when the machine 1 is in the operating mode. The notches 18 are made on the edges of the first film 30 while the holes 17 are made at the intersections of the inner non-formed areas 33. The geometry of the holes 17 and/or notches 18 is such that it forms rounded corners 35b on the border 35 of the package 34. In one embodiment shown in the drawings, each hole 17 has a rosette-shaped geometry made at the intersection of two non-formed areas 33. Each notch 18 has a half rosette-shaped geometry.

[0051] In a preferred embodiment, the holes 17 are used for performing evacuation in the sealing station 7. The notches 18 further allow correctly positioning the second movable bearing 28, particularly the hold-down plates 46 of said second movable bearing 28, which allows moving the first film 30 forward a predetermined distance, such that it is positioned correctly inside the respective stations of the machine 1. To that end, the machine 1 further comprises detection means (not depicted) configured for detecting the notches 18 and control means which position the displacement means 20 and 40 in the place indicated according to the detected values.

[0052] When thermoforming a single container 32, and therefore intermittently forming a single package 34, the punching means 15 only make notches 18. Therefore, given that the non-formed areas 33 are held down during vacuum formation and sealing by the molds 8 and 9 of the sealing station 7, in order to form the vacuum, the bottom mold 9 includes side openings through which the vacuum is formed. Otherwise, the vacuum and sealing process is equal to that previously described. At the same time, excess pressure is applied from the top mold 8 such that the second film 31 is sealed to the first film 30 along the perimeter of the non-formed areas 33, deforming due to the effect of heating and adapting to the shape of the product.

[0053] In another embodiment of the invention, the manufacturing method does not comprise the step of making holes 17 with the punching means 15. In this case, the second film 31 is sealed to the first film 30 longitudinally at discrete points by the pre-sealing means 52. Subsequently, in the sealing station 7 a nozzle is introduced through the openings formed between the sealed discrete points, forming the vacuum through said nozzles. The nozzles are then retracted. By providing aeration from the top mold and forming the vacuum from the bottom mold, the second film 31 is sealed along the entire contact surface of the first film 30 due to the compatibility of said films 30 and 31 and the prior heating of the second film 31 in the top mold 8.

[0054] In addition, the machine 1 comprises cutting means adapted for longitudinally and/or transversely cutting the films 30, 31, separating the formed packages 34 in the sealing station 7.

[0055] In the embodiment shown in the drawing, the cutting means comprise longitudinal blades 16 coupled to the second fixed bearing 29 of the displacement means 20. Said longitudinal blades 16 longitudinally cut the films 30 and 31, going through the corresponding holes 17. The cutting means further comprise transverse blades coupled to the bearing structure 50 of the machine 1, adapted for transversely cutting the films 30 and 31, going through the holes 17 and/or the notches 18 and separating the packages 34, placing them on a conveyor belt. In other embodiments, the transverse blades and longitudinal blades are arranged in the second fixed bearing 29 of the displacement means 20.

[0056] Although the described embodiments relate to skin packaging methods and machines, the previous description can be applied to a vacuum or modified atmosphere packaging machine and method with the exception of that corresponding to the sealing station. In a modified atmosphere package manufacturing machine, the sealing station comprises a top mold, a bottom mold, sealing means for sealing the second film 31 to the first film 30, particularly around the borders 35 of the package 34, evacuation means for evacuating gases from the package 34 that may exist and filling means introducing the desired gas or gases in the package 34. Such sealing stations are known in the state of the art, so they will not be described in detail. Once the first film 30 and the second film 31 are introduced in the sealing station, evacuation is performed and gases are injected through the filling means, through the holes 17 made by the punching means 15, the second film 31 being sealed to the first film 30 along the non-formed areas 33. In order to assure that the second film 31 does not block said holes 17 during the evacuation operation and while the gas or gases are being introduced, the sealing station 7 comprises a tool or nozzle introduced through the hole 17 to allow evacuating and introducing gas.

[0057] If a single package 34 is manufactured, a leak-tight cavity in which the films 30 and 31 are placed is formed, taking into account that the molds do not close against the non-formed area 32, the vacuum means cause the second film 31 to swell up, generating a gap between both films 30 and 31 where nozzles through which gas is injected are introduced. The nozzles

are then retracted and both films 30 and 31 are sealed to one another along the non-formed area 32.

[0058] In one embodiment of the manufacturing method in which the punching means 15 only make notches 18 on the edges of the first film 30, the second film 31 is sealed to the first film 30 longitudinally at discrete points in the pre-sealing station 52. Then in the sealing station, nozzles are introduced through the openings formed between the sealed discrete points, performing evacuation and filling through said nozzles. Said nozzles are then retracted, both films 30 and 31 being sealed to one another. Then in the cutting step, the corners 35b of the borders 35 of the package 34 are rounded.

[0059] The previous description relating to a modified atmosphere packaging machine can be applied to a vacuum packaging machine, with the difference that the process of filling the package with gas after forming the vacuum is not performed.

[0060] The machine 1 is adapted for making one or more packages arranged in parallel and one or more series of packages in parallel in each operating mode, such that the machine can be readily adapted to different configurations of packages to be formed.

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

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Modificeret atmosfære-, krympe- eller vakuumpakkemaskine samt fremgangsmåde

PATENTKRAV

1. Modificeret atmosfære-, krympe- eller vakuumpakkemaskine, der omfatter en første fremføringsanordning (2), der er indrettet til at fremføre en første folie (30) til maskinen (1), en anden fremføringsanordning (3), der er indrettet til at fremføre en anden folie (31) til maskinen (1), en forseglingsstation (7), hvor vakuummet dannes, og/eller hvor den modificerede atmosfære indføres mellem de to folier (30, 31), og hvor den anden folie (31) forsegles med den første folie (30) for at opnå en pakning (34), samt forskydningsanordninger (20, 40), der er indrettet til at bevæge den første folie (30) i en kørselsretning, **kendetegnet ved, at** forskydningsanordningerne (20, 40) er udformet til at bevæge mindst den første folie (30) over en kørselsafstand fra en udgangsposition, tilholde og køre i det mindste den første folie (30) i kørselsretningen til en endeposition, hvor forskydningsanordningerne (20, 40) er udformet til efterfølgende at vende tilbage til udgangspositionen, når maskinen befinder sig i driftstilstanden, hvor forskydningsanordningerne (20, 40) omfatter mindst ét fast leje (22, 29) og mindst ét bevægeligt leje (21, 28), der er bevægeligt i kørselsretningen i forhold til det faste leje (22, 29), hvor hvert fast leje (22, 29) omfatter mindst én understøtning (24, 27), på hvilken den første folie (30) anbringes, og mindst én tilholderplade (23, 26), der er udformet til at presse den første folie (30) mod den tilsvarende understøtning (24, 27) og holde den første folie (30) i en bestemt position, når maskinen (1) befinder sig i driftstilstanden, og hvor hvert bevægeligt leje (21, 28) omfatter mindst én understøtning (44, 47), på hvilken den første folie (30) anbringes, og mindst én tilholderplade (43, 46), der er udformet til at presse den første folie (30) mod den tilsvarende understøtning (44, 47), når maskinen arbejder i fremadrettet bevægelsestilstand, hvor tilholderpladerne (23, 26, 43, 46) presser mod ikke-formede områder (33) af den første folie (30), idet de ikke-formede områder (33) danner grænsen (35) af den pågældende pakning (34), der skal tilvejebringes, hvor maskinen (1) endvidere omfatter stanseanordninger (15), der er anbragt opstrøms i forhold til forseglingsstationen (7) og indrettet til stansning af den første folie (30) i et ikke-formet område (33), idet stanseanordningerne (15) frembringer mindst ét hul (17) og/eller et hak (18) i det ikke-formede område (33) ved skæringspunktet mellem

de ikke-formede områder (33).

2. Modificeret atmosfære-, krympe- eller vakuumpakkemaskine ifølge krav 1, hvor stanseanordningerne (15) er udformet til at frembringe hullet (17) ved skæringspunkterne mellem de indvendige ikke-formede områder (33) og/eller
5 hakkene (18) i kanterne af den første folie (30).
3. Modificeret atmosfære-, krympe- eller vakuumpakkemaskine ifølge et hvilket som helst af de foregående krav, hvor forskydningsanordningerne (20, 40) er udformet til at fastholde den første folie (30), når maskinen befinder sig i driftstilstanden.
4. Modificeret atmosfære-, krympe- eller vakuumpakkemaskine ifølge et hvilket som
10 helst af de foregående krav, der omfatter første forskydningsanordninger (20), der er anbragt før en påfyldningsstation, der er anbragt før forseglingsstationen (7), og/eller yderligere forskydningsanordninger (40), der er anbragt efter forseglingsstationen (7).
5. Modificeret atmosfære-, krympe- eller vakuumpakkemaskine ifølge det foregående krav, hvor de yderligere forskydningsanordninger (40) omfatter skæreanordninger
15 (16, 19), der er indrettet til langsgående og/eller tværgående overskæring af folierne (30, 31) og adskillelse af pakningerne (34) fra hinanden.
6. Modificeret atmosfære-, krympe- eller vakuumpakkemaskine ifølge et hvilket som helst af de foregående krav, der omfatter bæreanordninger, som kan trækkes tilbage, som er anbragt mellem forskydningsanordningerne (20) og forseglingsstationen (7),
20 og som er indrettet til at bære den første folie (30) i længderetningen og sammen med den første folie (30) bevæge sig ind i forseglingsstationen (7).
7. Modificeret atmosfære-, krympe- eller vakuumpakkemaskine ifølge et hvilket som helst af de foregående krav, der omfatter præ-fosegglingsanordninger (52), som er anbragt dér, hvor der etableres kontakt mellem de to folier (30, 31), og som er
25 indrettet til en indbyrdes forsegling af folierne (30, 31) i længderetningen ved diskrete punkter.
8. Modificeret atmosfære-, krympe- eller vakuumpakkemaskine ifølge et hvilket som helst af de foregående krav, der omfatter en opvarmningsstation, der er indrettet til opvarmning af den anden folie (31), samt hjælpeforskydningsanordninger (53), der
30 er indrettet til at fastklemme og bevæge den anden folie (31) gennem opvarmningsstationen.
9. Fremgangsmåde til modificeret atmosfære-, krympe- eller vakuumpakning, der omfatter følgende trin:

- fremføring af en første folie (30) til maskinen (1) gennem den første fremføringsanordning (2),
- positionering af en anden folie (31) på den første folie (30), efter at produktet, der skal indpakkes, er blevet anbragt på den første folie (30),
- 5 • dannelse af et vakuum og/eller indføring af den modificerede atmosfære mellem de to folier (30, 31),
- forsegling af de to folier (30, 31), så der tilvejebringes en pakning (34), og
- adskillelse af pakningen (34),

kendetegnet ved, at forskydningsanordningerne (20), tilholder og trækker den første folie (30) over en kørselsafstand fra en udgangsposition til en endeposition, når maskinen befinder sig i forskydningstilstanden, og efterfølgende vender tilbage til udgangspositionen, når maskinen (1) befinder sig i driftstilstanden, hvor, når maskinen (1) befinder sig i forskydningstilstanden, mindst én tilholderplade (43, 46) presser den første folie (30) mod én understøtning (44, 47), både tilholderpladen (43, 46) og understøtningen (44, 47) bevæges i en kørselsretning, og, når maskinen befinder sig i driftstilstanden, mindst én anden tilholderplade (23, 26) presser den første folie (30) mod en anden understøtning (24, 27), hvorved den første folie (30) fastholdes i denne position, hvor tilholderpladerne (23, 26, 43, 46) presser på ikke-formede områder (33) af den første folie (30), idet de ikke-formede områder (33) danner grænsen (35) af den pågældende pakning (34), der skal tilvejebringes, og hvor der, før de to folier (30, 31) indføres i en forseglingsstation (7), hvor vakuummet dannes, og/eller den modificerede atmosfære indføres mellem de to folier (30, 31), og de forsegles indbyrdes, frembringes huller (17) i den første folie (30) i ikke-formede områder (33) af den første folie (30), og/eller der frembringes hak (18) i kanterne af den første folie (30).

10. Fremgangsmåde til modificeret atmosfære-, krympe- eller vakuumpakning ifølge krav 9, hvor, før de to folier (30, 31) indføres i en forseglingsstation (7), hvor vakuummet dannes, og/eller den modificerede atmosfære indføres mellem de to folier (30, 31), og de forsegles indbyrdes, den anden folie (31) forsegles med den første folie (30) i længderetningen ved diskrete punkter.

11. Fremgangsmåde til modificeret atmosfære-, krympe- eller vakuumpakning ifølge krav 9 eller 10, hvor hullerne (17) og/eller hakkene (18) frembringes ved skæringspunktet mellem de ikke-formede områder (33).

12. Fremgangsmåde til modificeret atmosfære-, krympe- eller vakuumpakning ifølge et hvilket som helst af kravene 9 til 11, hvori hullerne (17) og/eller hakkene (18) har en geometri, således at denne danner afrundede hjørner (35b) på en grænse (35) af pakningen (34).
- 5 13. Fremgangsmåde til modificeret atmosfære-, krympe- eller vakuumpakning ifølge krav 10 eller 11, hvor vakuummet dannes, og/eller den modificerede atmosfære indføres gennem mindst én dyse, der er anbragt i hvert enkelt hul (17) og holder folierne (30, 31) adskilt, mens vakuummet dannes.
- 10 14. Fremgangsmåde til modificeret atmosfære-, krympe- eller vakuumpakning ifølge krav 9 til 13, hvor den anden folie (31), inden den anden folie (31) positioneres på den første folie (30), fastklemmes ved hjælp af hjælpeforskydningsanordninger (53), idet den anden folie (31) efterfølgende opvarmes med opvarmningsmidler, hvorved den anden folie (31) efterfølgende forsegles med den første folie (30) ved diskrete punkter.
- 15 15. Fremgangsmåde til modificeret atmosfære-, krympe- eller vakuumpakning ifølge krav 10, hvor vakuummet dannes, og/eller den modificerede atmosfære indføres gennem mindst én dyse, som kan trækkes tilbage, og som er anbragt i hver enkelt åbning, der dannes mellem de diskrete forseglingspunkter.

DRAWINGS

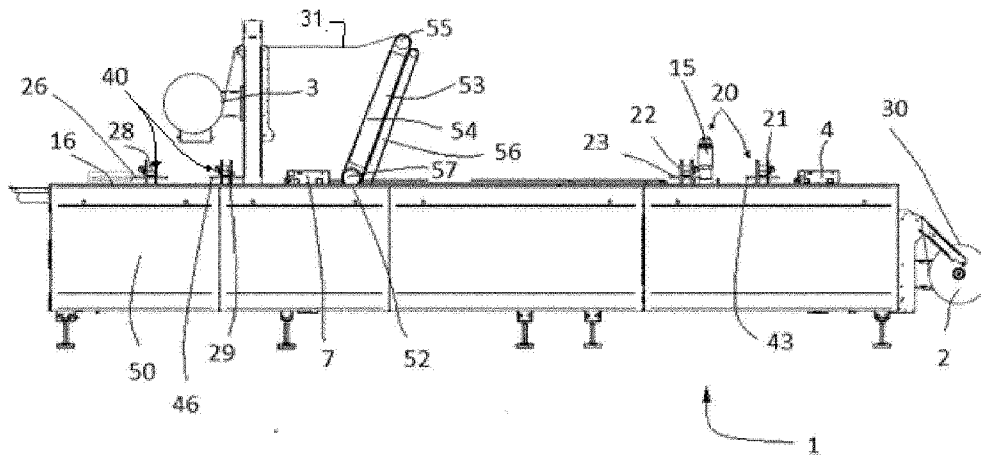


FIG. 1

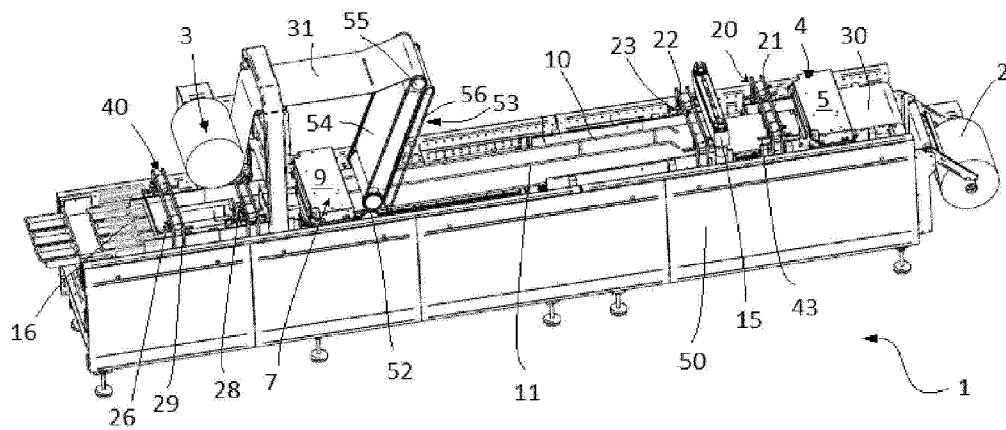


FIG. 2

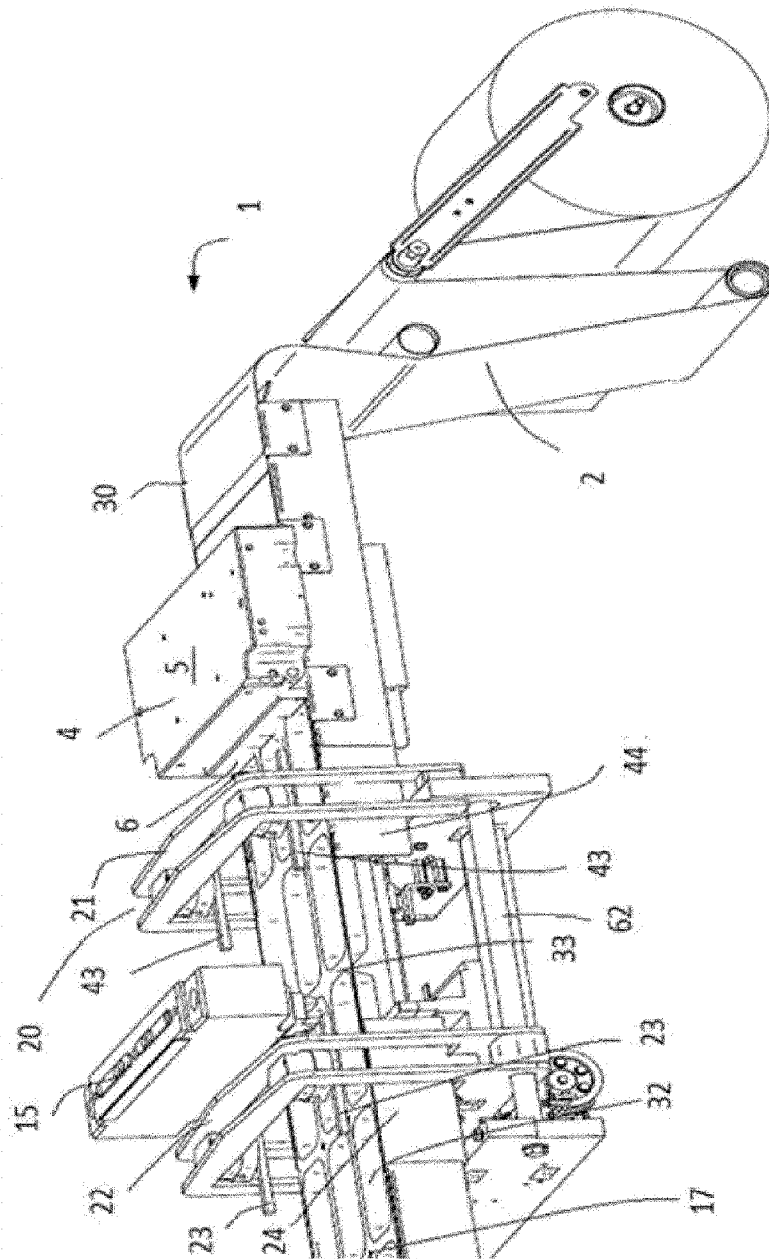


FIG. 3

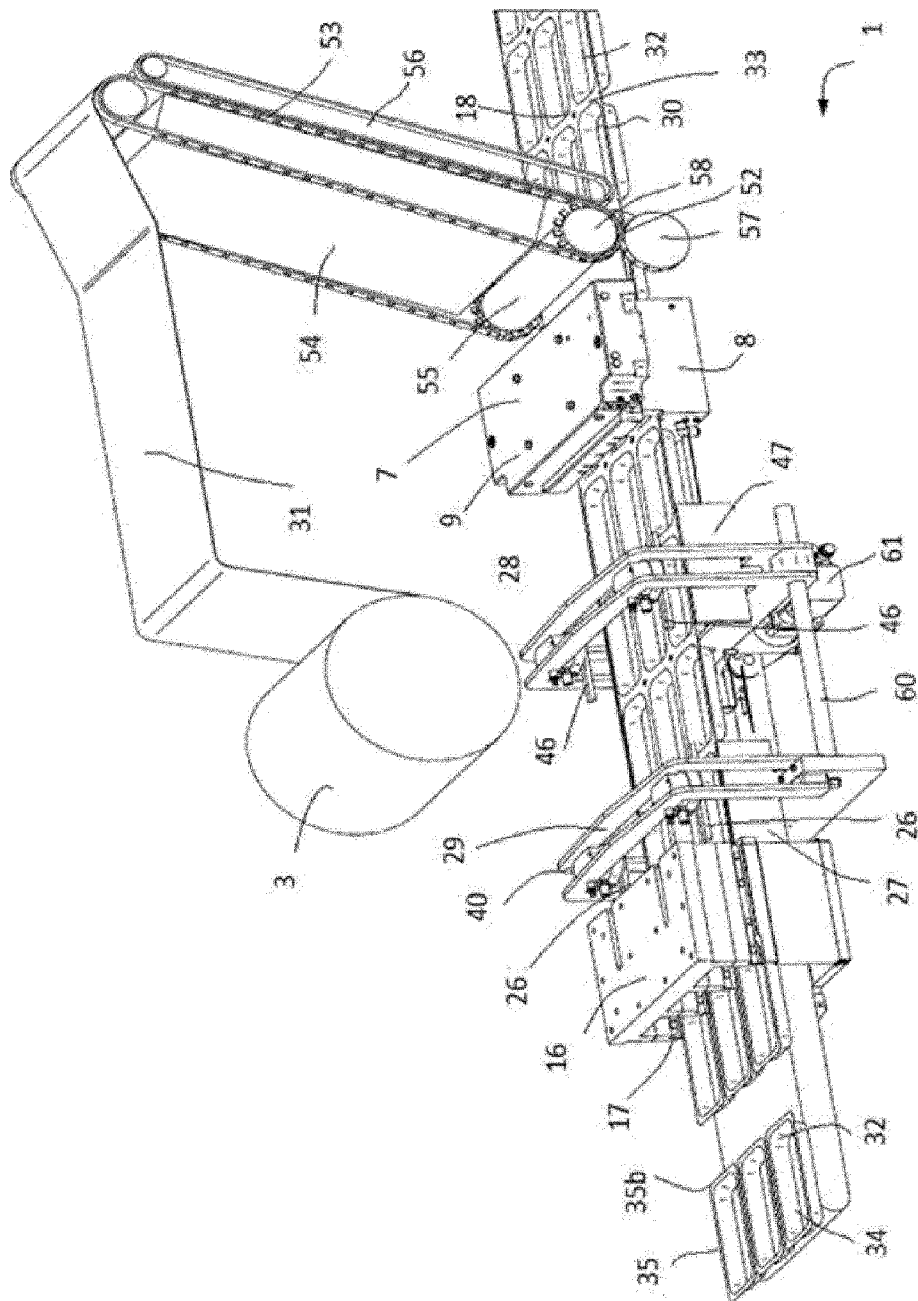


FIG. 4

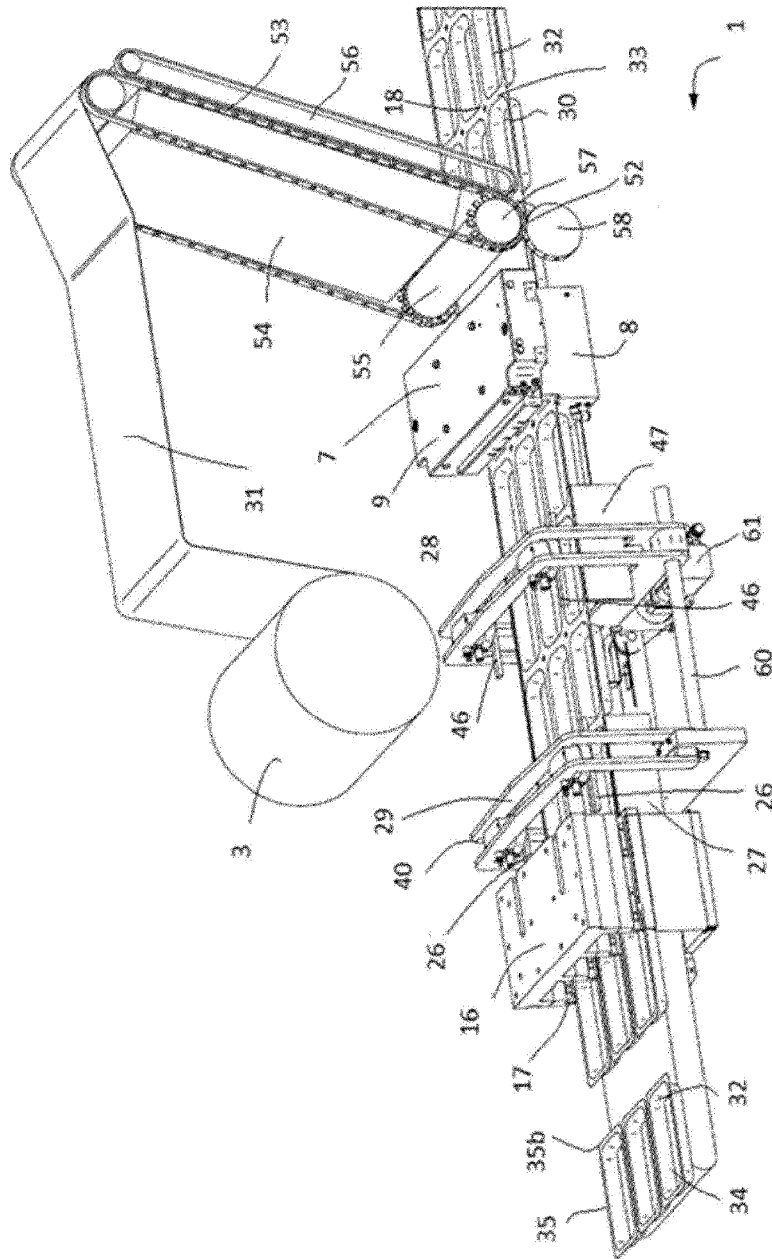


FIG. 4