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(54) **WRAPPING UNIT**
VERPACKUNGSEINHEIT
UNITÉ D'EMBALLAGE

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Description

[0001] The present invention relates to a wrapping unit designed for the packaging mainly of chocolates, candy, small pastries and the like, hereinafter generically termed products.

[0002] Packaging devices are known which provide for covering each individual product with a sheet made of a material preferably chosen among polymeric, metallic, paper and combinations thereof.

[0003] The flaps of this covering sheet can be mutually sealed (cold or with heat) for better isolation of the contained product and a consequent protection thereof against atmospheric and environmental agents.

[0004] In particular, devices of the known type provide for the shaping of a tubular covering for the product (obtained by wrapping the sheet around the product itself) in which a notch is preferably provided which ensures the possibility to open the package easily on the part of the user.

[0005] This technical solution is described in European patent No. 1888410.

[0006] This solution does not allow to achieve complete packaging of the product and therefore requires in subsequent stations the execution of subsequent closure processes.

[0007] The further closure stations of the known type are not versatile and are therefore suitable to perform a single type of packaging.

[0008] It is furthermore appropriate to specify that wrapping machines of the known type are also particularly specific: each of them is normally designed to provide a single type of wrapping; the poor versatility of machines of the known type makes them less appealing for potential clients.

[0009] WO 2014/097235 discloses a method for packaging articles to form a tubular wrapping of thermosealable sheet material inside which the articles to be packaged are prearranged, regularly distanced, and to feed the tubular wrapping to a cut station at which grip means, suitable to grasp in succession the articles, operate. The transverse cut of the tubular wrapping is performed in suitable step relationship in the section upstream the article grasped by the grip means and the prepackaged article is transferred to a closure rotatable head for closing the package, rotatable at a plurality of operative stations. In a first operative station the bellows folding of the open ends of the portion of tubular wrapping containing the article is performed. Successively, the sealing of the bellows folded ends of the wrapping is performed to obtain the airtight closure of the package.

[0010] The aim of the present invention is to solve the problems described above, providing a wrapping unit that is versatile and therefore suitable to generate wrappings with different characteristics on the processed products.

[0011] Within the scope of this aim, an object of the invention is to propose a wrapping unit in which format changing operations are particularly easy.

[0012] Another object of the invention is to propose a wrapping machine that is versatile.

[0013] A further object of the present invention is to provide a wrapping assembly and a wrapping machine that have modest costs, are relatively simple to provide in practice and safe in application.

[0014] In accordance with the invention, there is provided a wrapping unit as defined in independent claim 1 and a wrapping machine as defined in independent claim 2. Further advantageous features are defined in the dependent claims.

[0015] Further characteristics and advantages of the invention will become better apparent from the description of a preferred but not exclusive embodiment of the wrapping unit according to the invention, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is a schematic top view of a wrapping unit according to the invention prior to the clamping of a tubular blank that contains a product;

Figure 2 is a schematic top view of a wrapping unit according to the invention during the clamping of a tubular blank that contains a product;

Figure 3 is a schematic side view of a wrapping unit according to the invention during the clamping of a tubular blank that contains a product.

[0016] With particular reference to the figures cited above, a wrapping unit is generally designated by the reference numeral 1.

[0017] The wrapping unit 1 comprises at least one gripper 2 which is provided with mutually opposite jaws 3 for clamping at least one end of a tubular blank A that contains a product B to be packaged.

[0018] It is necessary to specify that at least one of the jaws 3 comprises at least one air extraction unit 4 to extract air from the inside of the tubular blank A simultaneously with its clamping.

[0019] The adoption of a unit 1 provided with a single gripper 2 allows to provide so called "singletwist" wrappings (generally termed "twist on top" wrappings), in which the product B is in contact with a closed base of the wrapping sheet (the blank A is therefore closed at one end and is not a tubular element provided with a through opening) and its open tubular portion is clamped by the gripper 2 and subsequently (in a subsequent station) subjected to twisting (rolling up onto itself with respect to its own axis).

[0020] According to an embodiment that is particular efficient and suitable to provide the wrapping termed "double twist" (i.e., in which the ends of the tubular blank are both open, upstream and downstream of the product B, and are subsequently rolled up onto themselves in a station arranged downstream of the unit 1), the grippers 2 can validly be at least two, which face each other.

[0021] The grippers 2 are mutually arranged at a distance that is substantially similar to the length of the tubular blank A, so that when the blank A is arranged between them its portions that protrude externally with respect to the product B are aligned with the jaws 3 (which close, clamping them).

[0022] In particular, a first gripper 2 is preset to clamp a portion of the tubular element A that is arranged upstream of the product B contained therein, while a second gripper 2 is preset to clamp a portion of the tubular element A arranged downstream of the product B contained therein.

[0023] The tubular blank A comprises, along its internal surface, areas that can be sealed.

[0024] Upon the clamping of the upstream portion or of the downstream portion of the product B on the part of the at least one gripper 2, the sealable areas that are internal to said portion make mutual contact and mate.

[0025] Generally speaking, sealable areas are adopted which are constituted by layers of adhesive (which can be active at room temperature or can be activated after heating or following clamping) which ensure perfect cohesion of the affected surfaces, with consequent isolation and segregation of the product B within the tubular blank A after the clamping performed with the grippers 2.

[0026] With particular reference to a constructive solution of unquestionable interest in practice and in application, at least one jaw 3 of each gripper 2 can comprise effectively an air extraction unit 4 for extracting air from the inside of the tubular blank A simultaneously with its clamping.

[0027] This air extraction allows greater stability and more uniform distribution of the covering with respect to the product B (the tubular element A tends to cover the product B by following its shape and replicating its contour) and minimizes the problems linked to oxidation and perishing of the product itself (the absence of air preserves the product B against potential contaminations or deteriorations).

[0028] According to the invention, the at least one jaw 3, more precisely the air extraction unit 4 thereof, comprises an oscillating terminal clamp 5, intended to abut against the tubular blank A.

[0029] The air extraction unit 4 is in fact operational by virtue of the sliding of the clamps 5 on the surface of the tubular blank A (as close as possible to the product B): progressively, the clamps 5 move into mutual contact, compressing the tubular blank A and therefore in practice eliminating the air.

[0030] The clamp 5 is pivoted to the respective jaw 3 with respect to a pivot 6: the clamp 5 can oscillate freely or can be controlled by a respective actuator.

[0031] More specifically, elastic means are arranged which are designed to keep the clamp 5 in a rotated configuration of maximum distance from the respective jaw 3: upon the clamping of the gripper 2, the terminal end of each clamp 5 is the first part of the jaw 3 that makes contact with the tubular blank A, facilitating the stretching

of the sheet (which constitutes the blank A) along the product B and the exit of the air that is present between them; therefore it ensures the provision of a covering that perfectly replicates the shapes of the product B.

[0032] According to a constructive hypothesis of unquestionable interest in application, the at least one jaw 2 comprises a heater 7 for increasing the temperature of a surface thereof that abuts against the tubular blank A.

[0033] The clamping of a portion of the blank A on the part of the gripper 2 provided with at least one jaw 3 that has a heated portion causes the heat-sealing of the portions (of the flaps) of the tubular blank A that are mutually pressed against each other.

[0034] It has thus been shown that even in the case of sealable areas that are constituted by layers of adhesive that can be activated by heat it is possible to ensure optimum packaging.

[0035] Furthermore, it is specified that it is possible (by adopting sheets made of thermoplastic material) to utilize the natural capacity of said material for thermal bonding, without the need to add additional sealable layers along the internal surfaces of the tubular blank A.

[0036] The present invention is also suitable to form an entire wrapping machine which comprises a packaging carousel provided with a plurality of consecutive stations.

[0037] In particular, the carousel comprises a first forming station.

[0038] The forming station is provided with grip means for receiving the product B from a supply unit and with mutual coupling elements for the flaps of a covering sheet.

[0039] In particular, the packaging sheet is conveniently arranged between the grip means and the supply unit.

The grip means therefore clamp the product B with the interposition of the packaging sheet, forming a partial wrapping of the product on the part of said sheet.

[0040] The coupling elements mutually join the protruding flaps of the sheet that is partially wrapped around the product B until they constitute a tubular blank A that contains the product.

[0041] The carousel further comprises, downstream of the forming station, a wrapping unit 1, which comprises at least one gripper 2 that is provided with mutually opposite jaws 3 for the clamping of at least one end of the tubular blank A that contains a product B to be packaged (blank A provided by the forming station in a preceding step).

[0042] At least one of the jaws 3 comprises, in this case, at least one air extraction unit 4 for extracting the air from the inside of the tubular blank A simultaneously with its clamping.

[0043] The carousel further comprises a twisting station, arranged downstream of the wrapping unit 1, which comprises at least one rotatable pair of pincers which is preset to clamp at least one of the ends of the tubular blank A that contains the product B and is closed at at least one end.

[0044] The twisting station performs the function of rolling onto itself the at least one end of the tubular blank A that is arranged upstream and/or downstream of the product B contained therein.

[0045] The carousel comprises, finally, an expulsion station that is designed to deliver the product A wrapped within the closed and partially rolled up sheet to a pre-defined exit area.

[0046] It is specified that the coupling elements that are present in the forming station and at least one of the mutually opposite jaws 3 of the forming unit 1 can validly comprise respective heaters 7 for the heat-sealing of the flaps of sheet that are clamped and juxtaposed by them.

[0047] If adhesive layers that are active even at ambient temperature are arranged on the sheet flaps, it is not necessary to have the heaters 7 (or it is possible to deactivate them if the machine comprises them anyway).

[0048] Furthermore, the coupling elements of the forming station can comprise effectively a blade for cutting the flaps of the sheet that are clamped by them.

[0049] Such blade is movable between a retracted configuration, at an arrangement of mutual separation of the coupling elements, and a protruding configuration, at an arrangement of mutual abutment of the coupling elements.

[0050] This generates an incision at the clamping region of the juxtaposed flaps of the sheet, creating a point for easy opening of the wrapping for the end user.

[0051] It is specified that in the machine according to the invention the wrapping unit 1 can validly comprise at least two grippers (ensuring the possibility to provide wrappings of the so-called "double-twist" type), which face each other and are arranged at a mutual distance that is substantially similar to the length of the tubular blank A.

[0052] As already described earlier, a first gripper 2 is preset to clamp a portion of the tubular element A arranged upstream of the product B contained therein, a second gripper 2 is preset to clamp a portion of the tubular element A arranged downstream of the product B contained therein.

[0053] In order to ensure that the machine according to the invention generates a wrapping that is aesthetically pleasant and suitable for a close-fitting covering of the product B, at least one jaw 3 of each gripper 2 comprises at least one air extraction unit 4 for extracting the air from inside the tubular blank A simultaneously with its clamping.

[0054] Advantageously, the present invention solves the previously described problems, proposing a wrapping unit 1 that is versatile and therefore suitable to generate wrappings with different characteristics on the processed products.

[0055] As shown, the unit 1 in fact allows to provide wrappings of the type known as "double twist", and in general sealed wrappings.

[0056] Usefully, the wrapping unit 1 ensures that the format changing operations are particularly easy: the unit

in fact has a structure that is simple and can be disassembled easily by any specialized operator.

[0057] Conveniently, the wrapping machine according to the invention also is versatile, allowing the provision of wrappings of various shapes and of the sealed type.

[0058] Validly, the present invention defines a wrapping unit 1 and a wrapping machine that are relatively simple to provide in practice and have modest costs, such as to render them technical solutions of assured application.

[0059] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0060] In the exemplary embodiments shown, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other exemplary embodiments.

[0061] In practice, the materials used, as well as the dimensions, may be any according to the requirements and the state of the art.

[0062] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A wrapping unit, comprising at least one gripper (2) provided with mutually opposite jaws (3) for clamping at least one end of a tubular blank (A) that contains a product (B) to be packaged, at least one of said jaws (3) comprising at least one air extraction unit (4) for extracting the air from the inside of said tubular blank (A) simultaneously with its clamping, said grippers (2) being at least two, which face each other and are arranged at a mutual distance that is substantially similar to the length of said tubular blank (A), a first gripper (2) being preset to clamp a portion of said tubular element (A) that is arranged upstream of the product (B) contained therein, a second gripper (2) being preset to clamp a portion of said tubular element (A) located downstream of the product (B) contained therein, at least one of said jaws (3) of each gripper (2) comprising at least one air extraction unit (4) for extracting the air from the inside of said tubular blank (A) simultaneously with its clamping, at least one of said jaws (3) comprising a heater (7) for increasing the temperature of a surface thereof that abuts against said tubular blank (A), the clamping of a portion of the blank (A) on the part of said gripper (2) provided with at least one jaw (3) having a heated portion producing the heat-sealing of the

flaps of the tubular blank (A) that are mutually pressed against each other, at least one of said jaws (3) comprises an oscillating terminal clamp (5) that is intended to abut against said tubular blank (A), said at least one air extraction unit (4) being formed by said terminal clamp (5) that is therefore preset to extract the air from said tubular blank (A).

2. A wrapping machine of the type comprising a packaging carousel provided with a plurality of consecutive stations, comprising:

- a first forming station, provided with grip means for receiving a product (B) from a supply unit and with mutual coupling elements for the flaps of a covering sheet, between said grip means and said supply unit there being a packaging sheet, said grip means clamping said product (B) with the interposition of said packaging sheet so as to form a partial wrapping of said product on the part of said sheet, said coupling elements mutually joining the protruding flaps of said sheet that is partially wrapped around said product (B) so as to constitute a tubular blank (A) that contains said product (B);

- a wrapping unit (1) comprising at least one gripper (2) provided with mutually opposite jaws (3) for the clamping of at least one end of a tubular blank (A) that contains a product (B) to be packaged, at least one of said jaws (3) comprising at least one air extraction unit (4) for extracting the air from the inside of said tubular blank (A) simultaneously with its clamping;

- a twisting station comprising at least one rotatable pair of pincers which is preset to clamp at least one of the ends of said tubular blank (A), which contains said product (B), and is closed at at least one end for rolling up said at least one end onto itself;

- an expulsion station preset to deliver said product (B) wrapped with in said sheet at a predefined output area;

said wrapping unit (1) comprising at least two grippers (2), which face each other and are arranged at a mutual distance that is substantially similar to the length of said tubular blank (A), a first gripper (2) being preset to clamp a portion of said tubular element (A) that is arranged upstream of the product (B) contained therein, a second gripper (2) being preset to clamp a portion of said tubular element (A) that is arranged downstream of the product (B) contained therein; and

at least one jaw (3) of each gripper (2) comprising at least one air extraction unit (4) for extracting the air from the inside of said tu-

bular blank (A) simultaneously with its clamping.

3. The wrapping machine according to claim 2, **characterized in that** said coupling elements and at least one of said mutually opposite jaws (3) comprise respective heaters (7) for heat-sealing the sheet flaps that are clamped and juxtaposed by them.
4. The wrapping machine according to claim 2, **characterized in that** said coupling elements comprise a blade for cutting the flaps of said sheet clamped by them, said blade being movable between a retracted configuration, at an arrangement for mutual separation of said coupling elements, and a protruding configuration, at an arrangement for mutual abutment of said coupling elements with consequent clamping of said juxtaposed flaps of said sheet.

Patentansprüche

1. Eine Verpackungseinheit umfassend mindestens einen Greifer (2) ausgestattet mit einander gegenüberliegenden Backen (3) zum Festklemmen von mindestens einem Ende eines rohrförmigen Rohlings (A), der ein Produkt (B) enthält, das verpackt werden soll, wobei mindestens eine der genannten Backen (3) mindestens eine Luftextraktionseinheit (4) umfasst zum Extrahieren der Luft aus dem Inneren des genannten rohrförmigen Rohlings (A) gleichzeitig mit seinem Festklemmen, wobei die genannten Greifer (2) mindestens zwei sind, welche einander gegenüber stehen und mit einem gegenseitigen Abstand angeordnet sind, der im Wesentlichen gleich ist zu der Länge des genannten rohrförmigen Rohlings (A), wobei ein erster Greifer (2) voreingestellt ist, um einen Teil des genannten rohrförmigen Elements (A), das stromaufwärts von dem Produkt (B), das darin enthalten ist, angeordnet ist, zu greifen, wobei ein zweiter Greifer (2) voreingestellt ist, um einen Teil des genannten rohrförmigen Elements (A), das stromabwärts von dem Produkt (B), das darin enthalten ist, angeordnet ist, zu greifen, wobei mindestens eine der genannten Backen (3) von jedem Greifer (2) mindestens eine Luft Extraktionseinheit (4) zum Extrahieren der Luft aus dem Inneren des genannten rohrförmigen Rohlings (A) gleichzeitig mit seinem Festklemmen umfasst, wobei mindestens eine der genannten Backen (3) ein Heizelement (7) umfasst zum Erhöhen der Temperatur einer Oberfläche davon, welche gegen den genannten rohrförmigen Rohling stößt, wobei das Festklemmen eines Teils des Rohlings (A) auf dem Teil des genannten Greifers (2) bereitgestellt ist mit mindestens einer Backe (3) die einen erhitzten Teil hat, welcher das Heißversiegeln der Klappen des rohrförmigen Rohlings (A) erzeugt, welche gegenseitig aneinan-

der gepresst werden, wobei mindestens eine der genannten Backen (3) eine oszillierende Anschlussklemme (5) umfasst, die gegen den genannten rohrförmigen Rohling (A) anstoßen soll, wobei die mindestens eine Luftextraktionseinheit (4) durch die genannte Anschlussklemme (5) gebildet wird, die deshalb voreingestellt ist, um die Luft aus dem rohrförmigen Rohling (A) zu extrahieren.

2. Eine Verpackungsmaschine vom Typ umfassend ein Verpackungskarussell bereitgestellt mit einer Vielzahl von aufeinander folgenden Stationen, die Folgendes umfasst:

- eine erste Formstation, bereitgestellt mit Eingriffsmitteln zum Aufnehmen eines Produkts (B) von einer Zuführeinheit und mit gegenseitigen Kopplungselementen für die Klappen eines Deckplatzes, wobei zwischen den genannten Eingriffsmitteln und der genannten Zuführeinheit eine Verpackungsfolie ist, wobei die genannten Eingriffsmittel das genannte Produkt (B) mit der Einfügung der genannten Verpackungsfolie festklemmen, um ein teilweises Verpacken des genannten Produkts auf dem Teil der genannten Folie zu bilden, wobei die genannten Kopplungselemente gemeinsam die vorstehenden Klappen der genannten Folie, die teilweise um das genannte Produkt (B) herumgewickelt ist, verbinden, um einen rohrförmigen Rohling (A) zu bilden, der das genannte Produkt (B) enthält;
- eine Verpackungseinheit (1) umfassend mindestens einen Greifer (2), bereitgestellt mit einander gegenüberliegenden Backen (3) für das Festklemmen von mindestens einem Ende eines rohrförmigen Rohlings (A), der ein Produkt (B) enthält, das verpackt werden soll, wobei mindestens eine der genannten Backen (3) mindestens eine Luftextraktionseinheit (4) umfasst, zum Extrahieren der Luft aus dem Inneren des genannten rohrförmigen Rohlings (A) gleichzeitig mit seinem Festklemmen;
- eine Abdreystation umfassend mindestens ein rotierbares Paar von Zangen, welche voreingestellt sind, um mindestens eines der Enden des genannten rohrförmigen Rohlings (A) festzuklemmen, welcher das genannte Produkt (B) enthält, und es wird an zumindest einem Ende geschlossen, zum Aufrollen des genannten mindestens einen Endes auf sich selbst;
- eine Auswurfstation, voreingestellt, um das genannte Produkt (B) eingepackt innerhalb der genannten Folie an einem vordefinierten Ausgabebereich zu liefern;

wobei die Verpackungseinheit (1) mindestens zwei Greifer (2) umfasst, welche sich

gegenüberliegen und in einem gegenseitigen Abstand angeordnet sind, der im Wesentlichen gleich ist zu der Länge des genannten rohrförmigen Rohlings (A), wobei ein erster Greifer (2) voreingestellt ist, um einen Teil des genannten rohrförmigen Elements (A) festzuklemmen, der stromaufwärts von dem Produkt (B) das darin enthalten ist, angeordnet ist, wobei ein zweiter Greifer (2) voreingestellt ist, um einen Teil des genannten rohrförmigen Elements (A) festzuklemmen, das stromabwärts von dem Produkt (B), das darin enthalten ist, angeordnet ist; und

wobei mindestens eine Backe (3) von jedem Greifer (2) mindestens eine Luftextraktionseinheit (4) zum Extrahieren der Luft von dem Inneren des genannten rohrförmigen Rohlings (A), gleichzeitig mit seinem Festklemmen, umfasst.

3. Die Verpackungsmaschine gemäß Anspruch 3, **dadurch gekennzeichnet, dass** die genannten Kopplungselemente und mindestens eine der genannten einander gegenüberliegenden Backen (3) entsprechende Heizelemente (7) umfassen für das Heißversiegeln der Folienklappen, welche durch sie festgeklemmt und nebeneinander angeordnet werden.

4. Die Verpackungsmaschine gemäß Anspruch 3, **dadurch gekennzeichnet, dass** die genannten Kopplungselemente eine Klinge zum Schneiden der Klappen der genannten Folie, welche durch sie festgeklemmt wurde umfassen, wobei die Klinge zwischen einer zurückgezogenen Konfiguration in einer Anordnung für gegenseitige Trennung der genannten Kopplungselemente, und einer vorstehenden Konfiguration, bei einer Anordnung für gegenseitiges Anstoßen der genannten Kopplungselemente mit anschließendem Festklemmen der genannten nebeneinander angeordneten Klappen der genannten Folie bewegbar ist.

Revendications

1. Unité d'enveloppement, comportant au moins une pince (2) pourvue de mâchoires (3) mutuellement opposées pour serrer au moins une extrémité d'une ébauche tubulaire (A) qui contient un produit (B) à emballer, au moins l'une desdites mâchoires (3) comportant au moins une unité d'extraction d'air (4) pour extraire l'air de l'intérieur de ladite ébauche tubulaire (A) simultanément à son serrage, lesdites pinces (2) étant au moins au nombre de deux, qui se font face et sont agencées à une distance mutuelle qui est sensiblement similaire à la longueur de ladite ébauche tubulaire (A), une première pince (2)

étant préréglée pour serrer une portion dudit élément tubulaire (A) qui est agencée en amont du produit (B) contenu dans celui-ci, une seconde pince (2) étant préréglée pour serrer une portion dudit élément tubulaire (A) située en aval du produit (B) contenu dans celui-ci, au moins l'une desdites mâchoires (3) de chaque pince (2) comportant au moins une unité d'extraction d'air (4) pour extraire l'air de l'intérieur de ladite ébauche tubulaire (A) simultanément à son serrage, au moins l'une desdites mâchoires (3) comportant un élément chauffant (7) pour augmenter la température d'une surface de celle-ci qui vient en butée contre ladite ébauche tubulaire (A), le serrage d'une portion de l'ébauche (A) sur la partie de ladite pince (2) pourvue d'au moins une mâchoire (3) ayant une portion chauffée produisant le thermoscellage des rabats de l'ébauche tubulaire (A) qui sont mutuellement pressés les uns contre les autres, au moins l'une desdites mâchoires (3) comporte une pince terminale oscillante (5) qui est destinée à venir en butée contre ladite ébauche tubulaire (A), ladite au moins une unité d'extraction (4) étant formée par ladite pince terminale (5) qui est donc préréglée pour extraire l'air de ladite ébauche tubulaire (A).

2. Machine à envelopper du type comportant un carrousel d'emballage pourvu d'une pluralité de stations consécutives, comportant :

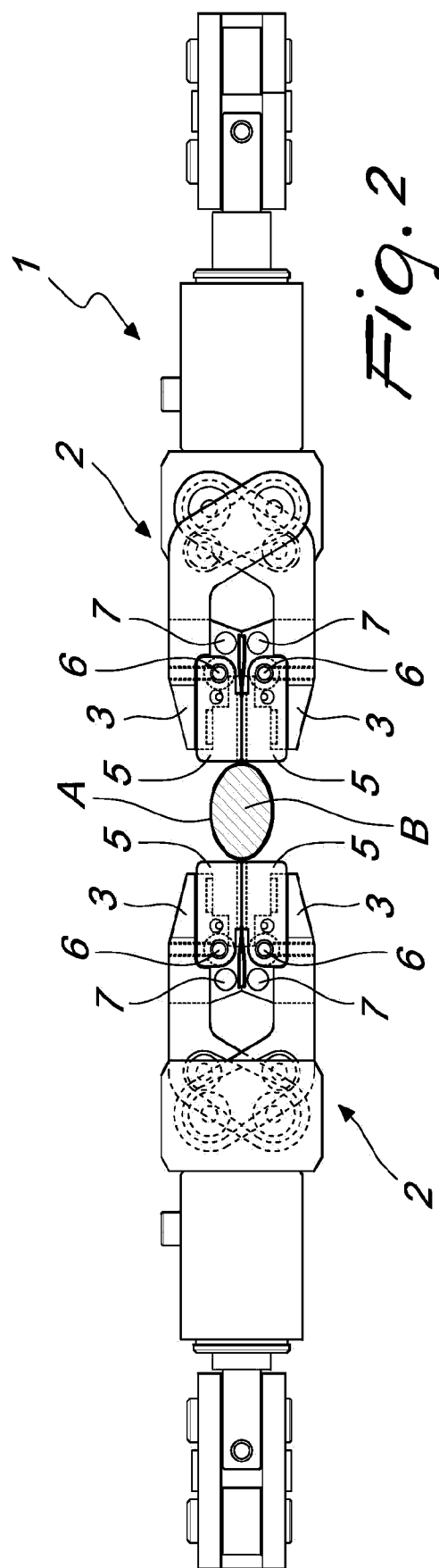
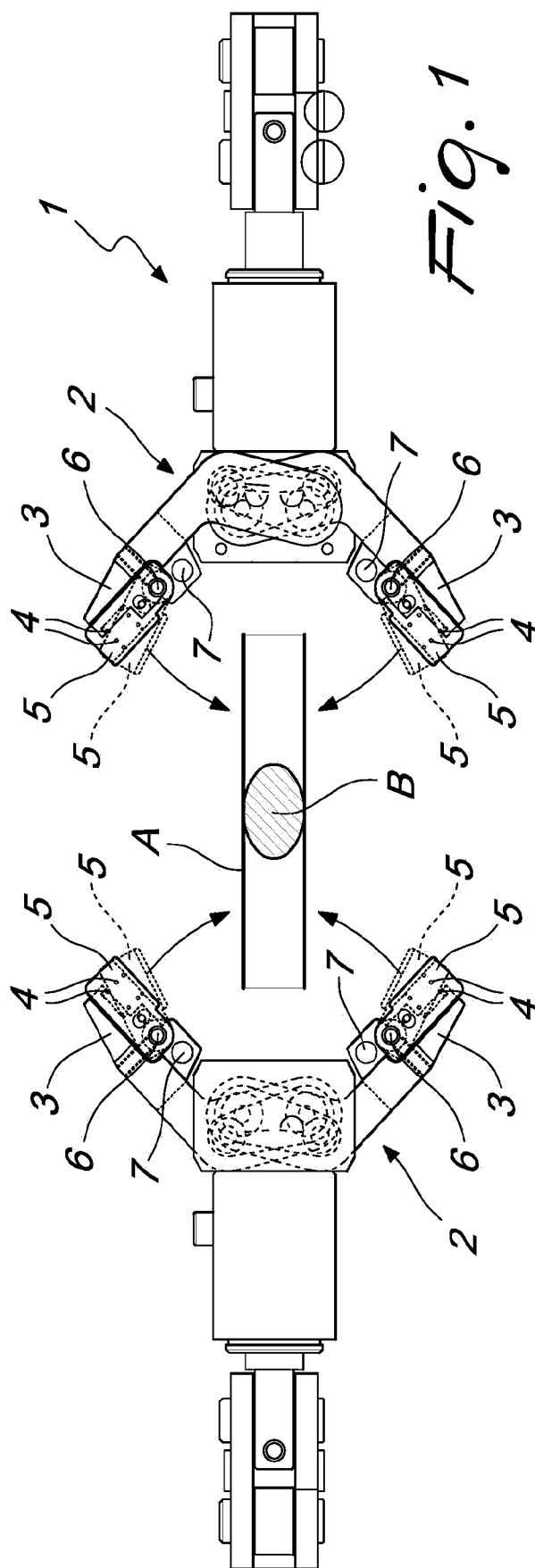
- une première station de formage, pourvue de moyens de préhension pour recevoir un produit (B) d'une unité d'alimentation et d'éléments de couplage mutuel pour les rabats d'une feuille de recouvrement, entre lesdits moyens de préhension et ladite unité d'alimentation étant agencée une feuille d'emballage, lesdits moyens de préhension serrant ledit produit (B) avec l'interposition de ladite feuille d'emballage de manière à former un enveloppement partiel dudit produit sur la partie de ladite feuille, lesdits éléments de couplage assemblant mutuellement les rabats en saillie de ladite feuille qui est partiellement enveloppée autour dudit produit (B) de manière à constituer une ébauche tubulaire (A) qui contient ledit produit (B),
- une unité d'enveloppement (1) comportant au moins une pince (2) pourvue de mâchoires (3) mutuellement opposées pour le serrage d'au moins une extrémité d'une ébauche tubulaire (A) qui contient un produit (B) à emballer, au moins l'une desdites mâchoires (3) comportant au moins une unité d'extraction d'air (4) pour extraire l'air de l'intérieur de ladite ébauche tubulaire (A) simultanément à son serrage,
- une station de torsion comportant au moins une paire de pinces rotatives qui est préréglée pour serrer au moins l'une des extrémités de ladite ébauche tubulaire (A), qui contient ledit

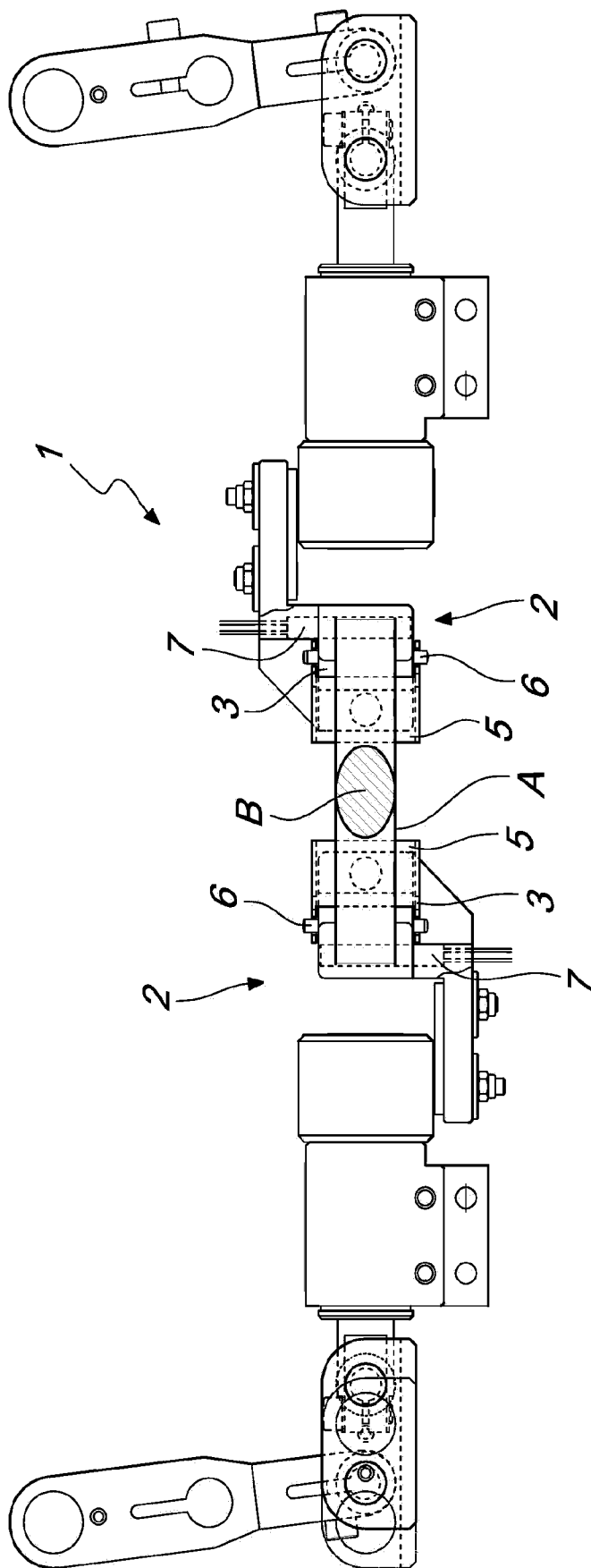
produit (B), et est fermée au niveau d'au moins une extrémité pour enrouler ladite au moins une extrémité sur elle-même,
- une station d'expulsion préréglée pour délivrer ledit produit (B) enveloppé à l'intérieur de ladite feuille dans une zone de sortie prédéfinie,

ladite unité d'enveloppement (1) comportant au moins deux pinces (2), qui se font face et sont agencées à une distance mutuelle qui est sensiblement similaire à la longueur de ladite ébauche tubulaire (A), une première pince (2) étant préréglée pour serrer une portion dudit élément tubulaire (A) qui est agencée en amont du produit (B) contenu dans celui-ci, une seconde pince (2) étant préréglée pour serrer une portion dudit élément tubulaire (A) qui est agencée en aval du produit (B) contenu dans celui-ci, et au moins une mâchoire (3) de chaque pince (2) comportant au moins une unité d'extraction d'air (4) pour extraire l'air de l'intérieur de ladite ébauche tubulaire (A) simultanément à son serrage.

3. Machine à envelopper selon la revendication 2, **caractérisée en ce que** lesdits éléments de couplage et au moins l'une desdites mâchoires (3) mutuellement opposées comporte des éléments chauffants (7) respectifs pour thermosceller les rabats de feuille qui sont serrés et juxtaposés par ceux-ci.

4. Machine à envelopper selon la revendication 2, **caractérisée en ce que** lesdits éléments de couplage comportent une lame pour couper les rabats de ladite feuille serrée par ceux-ci, ladite lame étant mobile entre une configuration rétractée, au niveau d'un agencement de séparation mutuelle desdits éléments de couplage, et une configuration en saillie, au niveau d'un agencement de mise en butée mutuelle desdits éléments de couplage avec un serrage conséquent desdits rabats juxtaposés de ladite feuille.





REFERENCES CITED IN THE DESCRIPTION

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