

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 832 819 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
27.12.2000 Bulletin 2000/52

(51) Int Cl.7: **B65B 11/48**, B65B 31/02,
B65B 31/04

(21) Application number: **97116633.5**

(22) Date of filing: **24.09.1997**

(54) **Vacuum packaging device, particularly for foodstuffs**

Vakuumverpackungsvorrichtung, insbesondere für Nahrungsmittel

Dispositif d'emballage sous vide, spécialement pour produits alimentaires

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI NL PT
SE**
Designated Extension States:
LT LV RO SI

(30) Priority: **26.09.1996 IT AL960002**

(43) Date of publication of application:
01.04.1998 Bulletin 1998/14

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Description

[0001] The present invention relates to a packaging device, particularly for foodstuffs or technical materials.

[0002] Vacuum-forming machines with a bell-shaped chamber are currently known which comprise a vacuum pump connected to a chamber, also known as vacuum chamber, and inside which a preformed pouch, open on three sides, is usually placed; a foodstuff is placed inside the pouch.

[0003] Therefore, in these conventional machines the preformed pouch already contains the foodstuff when it is inserted in the vacuum chamber, then vacuum is formed inside the chamber and thermal bonding is carried out at the free side of the preformed pouch.

[0004] This conventional technology entails the need to use preformed pouches, whose size is therefore comparable to the size of the product; considerable manual labor is also required.

[0005] Accordingly, there are operating steps which extend the time required to achieve vacuum packaging of the product; moreover, if packaging occurs in a controlled atmosphere, most of the gas is wasted, since it is diffused not only in the pouch but mostly inside the vacuum chamber.

[0006] EP-603.704 is also known in which foodstuffs are packaged by using a plastic film which is guided through a folding station in order to obtain a double layer and is then thermally bonded so as to form pockets.

[0007] The pockets are provided with the intended size or capacity before being filled and sealed.

[0008] Thermal bonding and formation are followed by filling, closure and cutting of the resulting pockets or pouches: this solution, however, is complicated, in that it entails a plurality of separate stations for performing the individual operations to which the plastic film must be subjected sequentially.

[0009] Hot or cold formation of the plastic film is furthermore provided for, in addition to filling, by means of a nozzle, with liquid products, flours or finely granulated products, and therefore it is not possible to use the solution described for solid products having preset volumes, such as sliced ham and the like, meat, cheeses divided into portions, trays containing foodstuffs and non-food products.

[0010] Moreover, in the conventional described solution, in order to close the pocket or pouch it is necessary to make it pass through various operating steps, with the consequent need for optimum centering of the pouch at each station so as to allow the optimum intended treatment.

[0011] A device having features as comprises in the preamble of claim 1 is known from the prior document EP-A-0 405 718.

[0012] The aim of the present invention is to solve the above-described problems, by eliminating the drawbacks of the cited prior art and thus by providing a device which allows the vacuum or compensated-vacuum

packaging of technical products or foodstuffs such as sliced ham or the like, meat, cheeses divided into portions, and trays containing food and non-food products.

[0013] Within the scope of this aim, an important object of the present invention is to provide a device which allows to package said products quickly and with limited personnel intervention.

[0014] Another important object of the present invention is to provide a product packaging device which has a reduced operating cycle with short execution times.

[0015] Another important object of the present invention is to provide a device in which said packaging can occur at a very low cost for each individual package.

[0016] Another important object of the present invention is to provide a device which also allows to use shrink-wrap films, optionally with the possibility to use a reduced amount of gas which is sufficient only for the package that contains the product.

[0017] Another object of the present invention is to provide a device which is also reliable and safe in use.

[0018] This aim, these objects and others which will become apparent hereinafter are achieved by a packaging device, according to the invention, and having the features set forth in claim 1.

[0019] Further characteristics and advantages of the present invention will become apparent from the following detailed description of two particular embodiments thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a partially sectional side view of the components of the device;

figure 2 is a top view of the device;

figure 3 is a view of the arrangement of the nozzle;

figure 4 is a different view of the nozzle;

figure 5 is a partially sectional side view of the components of a second embodiment;

figure 6 is a perspective view of the components of the device of figure 5;

figure 7 is a schematic plan view of the components of the device of figure 5;

figure 8 is a sectional view, taken along a plane which lies transversely to the advancement of the film at the bell-shaped vacuum chamber of the device of figure 5.

[0020] With reference to the above figures, the reference numeral 1 designates the packaging device particularly for technical materials or foodstuffs, which are designated by the reference numeral 2.

[0021] The device 1 comprises a bell-shaped vacuum chamber, designated by the reference numeral 3, which is substantially constituted by a lower container 4 and by a closeable upper cover 5; suitable first strips or gaskets 6 for airtightness are provided perimetrically with respect to the container 4 and the cover 5.

[0022] The device uses a single-folded film 7, which as such has a first longitudinal side 8 which is closed

and a second longitudinal side 9 which is open.

[0023] A first thermal bonding bar 11 is arranged transversely inside the bell-shaped vacuum chamber 3 at its inlet 10; a substantially L-shaped cutting blade 12 is arranged laterally to said first thermal bonding bar 11, and a first wing 13 of the blade is parallel to the first thermal bonding bar 11, whilst the second wing 14 is arranged at right angles to the first wing in the direction of the advancement of the single-folded film 7.

[0024] A likewise L-shaped second thermal bonding bar 15 is provided adjacent to the cutting blade 12 and forms a third wing 16, which is adjacent and parallel to the first wing 13, and a fourth wing 17, which is adjacent and parallel to the second wing 14.

[0025] The first thermal bonding bar 11, the second thermal bonding bar 15 and the cutting blade 12 are advantageously but not necessarily associated with a same support 50 which is movable inside the bell-shaped vacuum chamber and work in abutment against suitable contrast elements 51 which are associated inside the cover 5.

[0026] The bell-shaped vacuum chamber 3 also contains at least one nozzle 18 which allows to produce vacuum and/or to inject gas or mixtures either at the second open longitudinal side 9 of the single-folded film or at the fourth transverse side 20 which is adjacent to the lateral inlet 10 of the bell-shaped vacuum chamber.

[0027] The solution shown in figure 2 uses a nozzle 18 which has a lens-shaped cross-section and is inserted hermetically from the lateral inlet 10 of the bell-shaped chamber by means of a suitable piston 31.

[0028] Once vacuum or vacuum plus gas has been formed, the piston 31 causes the nozzle to retract in order to allow activation of the first and second thermal bonding bars 11, 15 and of the cutting blade 12 so as to obtain a closed package 21.

[0029] In this case, there is provided a presser 32 which can move inside the bell-shaped chamber 3 and provides a seal because of the presence, at one of its ends, of a second strip or gasket 33 which works in contrast with a third strip or gasket 34 arranged inside the cover 5.

[0030] Preferably, the vacuum and/or the controlled atmosphere are produced in the bell-shaped chamber and inside the package 21 across a first path 35 and a second separate path 36, each whereof has a sensor 36a and 36b which detects and controls internal pressure.

[0031] In the solution shown in figure 5 there is provided only the support 50 for the first and second thermal bonding bars and the cutting blade, whilst the nozzle 18 is arranged at the second longitudinal side 9.

[0032] Use of the device is therefore as follows: assuming that the system is already in a steady-state operating condition, the third transverse side 19 of the single-folded film 7, which is adjacent to the lateral exit 30 in the bell-shaped vacuum chamber, is already partially sealed along its vertical extension; the operator then

places the product 2 to be packaged inside the single-folded film through the second longitudinal side 9, which is open.

[0033] It is then sufficient to place inside the bell-shaped vacuum chamber the product contained in the single-folded film; thereafter, by lowering the upper closeable cover 5, the vacuum or vacuum-gas cycle begins.

[0034] Differently from the solution of figure 1, in the solution of figure 5 there is a cost improvement thanks to the fact that the nozzle 18 is laterally adjacent to the second open longitudinal side 9 of the single-folded film: if gas is introduced, use of the gas is limited only to the volume of the single-folded film which, being placed inside the bell-shaped vacuum chamber, assumes a pocket-like configuration, since the fourth transverse side 20 is clamped between the strips 6.

[0035] At the end of the vacuum or vacuum-gas cycle, the nozzle, which advantageously has a lens-shaped cross-section, injects gas or mixtures, if required; then the first thermal bonding bar 11 is activated, forming the third closed transverse side 19 of the next container or package 21 that can be obtained; then the second thermal bonding bar 15 is activated, closing both the fourth transverse side 20 and the second longitudinal side 9.

[0036] During this cycle, the product is not moved inside the bell-shaped chamber.

[0037] A closed package 21 is then obtained by activating the cutting blade 12.

[0038] It is thus possible to open the bell-shaped chamber, remove the resulting package and start a new cycle.

[0039] It has thus been shown that the invention has achieved the intended aim and objects, a device having been provided which, by using a single-folded film, allows to obtain a vacuum or controlled-atmosphere package even with shrink-wrap films by means of an operating sequence that occurs only at the bell-shaped vacuum chamber, without the need to handle the product, allowing to package solid products such as sliced ham or the like, meat, cheeses divided into portions and trays containing both foodstuffs and non-food products.

[0040] In the illustrated solutions, furthermore, formation and closure of the single-folded film occur at the bell-shaped vacuum chamber, simultaneously closing a transverse side of the next pouch, and all this occurs inside the bell-shaped vacuum chamber and during the same cycle.

[0041] It is also possible to use only the amount of gas required for the volume of the package that contains the product; all this allows to reduce the treatment times and costs of each individual package.

[0042] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

[0043] The materials and the dimensions that constitute the individual components may also of course be the most pertinent according to specific requirements.

[0044] 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 packaging device, particularly for packing foodstuff or technical material insertable between the longitudinally folded parts of a single-folded film from an open side thereof, the device comprising thermal bonding means (11, 12, 15) which are substantially L-shaped for sealing the film both at the longitudinal open side (9) and at the transversal (20) sides thereof, and at least one nozzle (18), for vacuum producing and/or for gas or mixture introducing, **characterized in that** it further comprises a vacuum chamber (3) which is openable for receiving a length of at least one said single-folded film (7) with inserted therein a said material (2) to be packed, and respectively, sealingly closeable whereupon vacuum producing and/or gas or mixture introducing is actuatable with said film length assuming a pocket-like configuration, and in that said thermal bonding means (11, 12, 15) are located for operation inside said vacuum chamber (3), said at least one nozzle (18) being placed at said vacuum chamber (3) so as to face upon closure thereof said longitudinal (9) and/or transversal (20) open sides of said film length.
2. A device according to claim 1, characterized in that said vacuum chamber (3) is constituted by a lower container (4) and by an upper closeable cover (5), both of which are perimetrically provided with first sealing strips or gaskets (6).
3. A device according to any of the claims 1 or 2, characterized in that said thermal bonding means comprise a first thermal bonding bar (11), and adjacent thereto, a cutting blade (12) and a second thermal bonding bar (15), said first and second bonding bars (11, 15) being operatable in succession for closing the three open sides (9, 19, 20) of said at least one single-folded film so as to form at least one closed pouch or container.
4. A device according to claim 3, characterized in that said first thermal bonding bar (11) is arranged transversely to the insertion direction of said single-folded film (7), at the film inlet part (10) of said vacuum chamber (3).
5. A device according to claims 1 and 4, characterized

in that said cutting blade (12) is substantially L-shaped and is laterally adjacent to said first thermal bonding bar (11).

6. A device according to claims 1 and 5, characterized in that said cutting blade (12) has a first wing (13) which is laterally adjacent to said first thermal bonding bar (11) and a second wing (14) which is arranged at right angles thereto.
7. A device according to claims 1 and 6, characterized in that said second thermal bonding bar (15) is substantially L-shaped and is located adjacent to said cutting blade (12).
8. A device according to claims 1 and 7, characterized in that said second thermal bonding bar (15) has a third wing (16), which is adjacent to said first wing (13) of said cutting blade (12), and a fourth wing (17), which is adjacent to said second wing (14) of said cutting blade (12).
9. A device according to one or more of the preceding claims, characterized in that it comprises at least one fluid connection path (35, 36) connecting a vacuum pump and/or a gas/mixture supply to the interior of said chamber (3), for forming vacuum and/or controlled atmosphere inside said vacuum chamber (3).
10. A device according to claim 9, characterized in that it comprises separate first (35) and second (36) said connection paths for forming vacuum and/or injecting gas or mixtures inside said vacuum chamber (3), at each of said paths (35, 36) a respective sensor (36a, 36b) being provided for detecting and controlling the pressure inside said vacuum chamber (3) and/or said single-folded film (7).
11. A device according to one or more of claims 3-10, characterized in that said first (11) and second (15) thermal bonding bars and said cutting blade (12) are associated with at least one support (50) which is movable inside said chamber (3) so as to interact with suitable contrast elements (51) associated inside said cover (5).
12. A device according to one or more of the preceding claims, characterized in that said at least one nozzle (18) is hermetically insertable in, and extractable from said vacuum chamber (3) by action of a suitable piston (31).
13. A device according to claims 1 and 12, characterized in that it further comprises a presser (32) which is movable inside said vacuum chamber (3) and is provided, at an end thereof, with a second sealing strip or gasket (33) operating in contrast with a third

sealing strip or gasket (34) arranged inside said cover (5) for sealing therebetween said film (7) in said pocket-like configuration.

14. A device according to one or more of the claims 1, 3, 4, 12 and 13, characterized in that said at least one nozzle (18) is arranged in said vacuum chamber (3) at the open longitudinal side (9) of said single-folded film (7) and is connected to a gas or mixture supply. 5
15. A device according to one or more of the claims 1, 3, 4, 12 and 13, characterized in that said at least one nozzle (18) is arranged at the film inlet part (10) of said vacuum chamber (3) at the open transverse side (20) of said single-folded film (7). 10
16. A method for packing foodstuff or technical material insertable between the longitudinally folded parts of a single-folded film from an open side thereof, the method comprising the steps of: 15
 - a) providing an openable/closeable vacuum chamber (3) and thermal bonding means (11, 12, 15) which are substantially L-shaped and are located for operation inside said vacuum chamber (3); 25
 - b) placing at least one length of a single-folded film (7), with inserted therein a said material (2), in said vacuum chamber (3) while the chamber is open; 30
 - c) sealingly closing said vacuum chamber (3), whereupon said film assumes a pocket-like configuration, and forming inside said chamber (3) and said single-folded film (7) a vacuum and/or a controlled atmosphere by way of at least one nozzle (18) placed so as to face upon closure of the chamber the longitudinal (9) and/or transversal (20) open sides of said film length, and/or through at least one fluid connection path (35, 36) connected to a vacuum pump and/or a gas or mixture supply; 35
 - d) heat sealing said film length inside said closed chamber, both at the longitudinal open side (9) and at the transversal (19, 20) sides, by way of said thermal bonding means (11, 12, 15), so as to form a closed pouch or container. 40
17. A method according to claim 16, comprising operating in succession, for closing the three open sides (9, 19, 20) of said single-folded film (7), said thermal bonding means which are constituted by a first thermal bonding bar (11) located at the inlet side (10) of the chamber (3) transversal to the introduction direction of the film (7), and adjacent thereto, a cutting blade (12) and a second thermal bonding bar (15), said cutting blade (12) and said second bar (15) being substantially L-shaped. 45

18. A method according to claim 17, characterized in that said second bonding bar (15) performs during step d) the complete closure of the open sides of said at least one single-folded film (7) so as to provide a closed package.

19. A method according to one or more of claims 16-18, characterized in that it is cyclical, comprising for each cycle the step of insertion of a said material at said second open longitudinal side (9) of a said length of single-folded film (7), insertion of the film with the material therein inside said vacuum chamber (3) for vacuum and/controlled atmosphere forming, and the heat sealing of the film.

20. A method according to any of the claims 16-19, characterized in that during step c) it is produced, at least inside said at least one single-folded film (7) contained in said vacuum chamber (3), vacuum and, optionally by way of gas or mixture injection, a controlled atmosphere.

21. A method according to any of claims 16-20, characterized in that during step c), the vacuum is produced through said at least one fluid connection path (35, 36), while the controlled atmosphere is produced by way of said at least one nozzle (18)

Patentansprüche

1. Verpackungsvorrichtung, insbesondere zum Verpacken von Nahrungsmitteln oder technischen Materialien, die zwischen die in Längsrichtung gefalteten Teile einer einfach gefalteten Folie von einer offenen Seite der Folie aus einführbar sind, wobei die Vorrichtung im wesentlichen L-förmige Mittel zum Wärmekleben (11, 12, 15) zum Versiegeln der Folie sowohl an ihrer offenen Längsseite (9) als auch an ihren Querseiten (20) und zumindest eine Düse (18) zum Erzeugen eines Vakuums und/oder Einführen eines Gases oder eines Gemisches enthält, dadurch **gekennzeichnet**, daß sie ferner eine Vakuumkammer (3) enthält, die zum Aufnehmen einer Länge der zumindest einen einfach gefalteten Folie (7) mit einem darin eingeführten zu verpackenden Material (2) zu öffnen und entsprechend abdichtend verschließbar ist, worauf das Erzeugen eines Vakuums und/oder das Einführen eines Gases oder eines Gemisches so erfolgt, daß die Folienlänge eine taschenähnliche Form annimmt, und daß Mittel zum Wärmekleben (11, 12, 15) zum Betrieb in der Vakuumkammer (3) angeordnet sind, wobei die zumindest eine Düse (18) so an der Vakuumkammer (3) positioniert ist, daß sie bei Schließen derselben der offenen Längsseite (9) und/oder der offenen Querseite (20) der Folienlänge gegenübersteht.

2. Vorrichtung nach Anspruch 1, dadurch **gekennzeichnet**, daß die Vakuumkammer (3) aus einem unteren Behälter (4) und einer oberen schließbaren Abdeckung (5) besteht, die jeweils an ihrem Umfang erste Dichtungsstreifen oder Dichtungen (6) haben. 5
3. Vorrichtung nach einem der Ansprüche 1 oder 2, dadurch **gekennzeichnet**, daß die Mittel zum Wärmeleben eine erste Wärmelebeschiene (11) und angrenzend daran eine Schneidklinge (12) und eine zweite Wärmelebeschiene (15) haben, wobei die erste und die zweite Wärmelebeschiene (11, 15) zum Schließen der drei offenen Seiten (9, 19, 20) der zumindest einen einfach gefalteten Folie nacheinander betätigbar sind, um zumindest eine geschlossene Tasche oder einen geschlossenen Behälter zu erzeugen. 10 15
4. Vorrichtung nach Anspruch 3, dadurch **gekennzeichnet**, daß die erste Wärmelebeschiene (11) quer zur Einführöffnung der einfach gefalteten Folie (7) an dem Folieneingang (10) der Vakuumkammer (3) angeordnet ist. 20 25
5. Vorrichtung nach den Ansprüchen 1 und 4, dadurch **gekennzeichnet**, daß die Schneidklinge (12) im wesentlichen L-förmig ist und seitlich an die erste Wärmelebeschiene (11) angrenzt. 30
6. Vorrichtung nach den Ansprüchen 1 und 5, dadurch **gekennzeichnet**, daß die Schneidklinge (12) einen seitlich an die erste Wärmelebeschiene (11) angrenzenden ersten Flügel (13) und einen rechtwinklig dazu angeordneten zweiten Flügel (14) hat. 35
7. Vorrichtung nach den Ansprüchen 1 und 6, dadurch **gekennzeichnet**, daß die zweite Wärmelebeschiene (15) im wesentlichen L-förmig ist und an die Schneidklinge (12) angrenzt. 40
8. Vorrichtung nach den Ansprüchen 1 und 7, dadurch **gekennzeichnet**, daß die zweite Wärmelebeschiene (15) einen an den ersten Flügel (13) der Schneidklinge (12) angrenzenden dritten Flügel (16) und einen an den zweiten Flügel (14) der Schneidklinge (12) angrenzenden vierten Flügel (17) hat. 45
9. Vorrichtung nach einem oder mehreren der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß sie zumindest eine Strömungsverbindung (35, 36) hat, die eine Vakuumpumpe und/oder eine Gas/Gemischzufuhr mit dem Inneren der Kammer (3) verbindet, um in der Vakuumkammer (3) ein Vakuum und/oder eine geregelte Atmosphäre zu erzeugen. 50 55
10. Vorrichtung nach Anspruch 9, dadurch **gekennzeichnet**, daß sie getrennte erste (35) und zweite (36) Verbindungen zum Erzeugen eines Vakuums und/oder Einspritzen von Gas oder Gemischen in die Vakuumkammer (3) hat, wobei an jeder Verbindung (35, 36) ein entsprechender Sensor (36a, 36b) zum Erfassen und Steuern des Drucks in der Vakuumkammer (3) und/oder der einfach gefalteten Folie (7) angeordnet ist.
11. Vorrichtung nach einem oder mehreren der Ansprüche 3 bis 10, dadurch **gekennzeichnet**, daß die erste (11) und die zweite (15) Wärmelebeschiene sowie die Schneidklinge (12) zumindest einem Träger (50) zugeordnet sind, der in der Kammer (3) so bewegbar ist, daß er mit geeigneten Gegenelementen (51) in der Abdeckung (5) zusammenwirkt.
12. Vorrichtung nach einem oder mehreren der vorhergehenden Ansprüche, dadurch **gekennzeichnet**, daß die zumindest eine Düse (18) durch die Wirkung eines geeigneten Kolbens (31) hermetisch in die Vakuumkammer (3) einführbar und daraus herausziehbar ist.
13. Vorrichtung nach den Ansprüchen 1 und 12, dadurch **gekennzeichnet**, daß sie eine Druckvorrichtung (32) enthält, die in der Vakuumkammer (3) bewegbar ist und an einem Ende einen zweiten Dichtungsstreifen oder eine zweite Dichtung (33) hat, die mit einem in der Abdeckung (5) angeordneten dritten Dichtungsstreifen oder einer dritten Dichtung (34) als Gegenelement zusammenwirkt, um dazwischen die Folie (7) in der taschenähnlichen Form zu versiegeln.
14. Vorrichtung nach einem oder mehreren der Ansprüche 1, 3, 4, 12 und 13, dadurch **gekennzeichnet**, daß die zumindest eine Düse (18) in der Vakuumkammer (3) an der offenen Längsseite (9) der einfach gefalteten Folie (7) angeordnet und mit einer Gas- oder Gemischzufuhr verbunden ist.
15. Vorrichtung nach einem oder mehreren der Ansprüche 1, 3, 4, 12 und 13, dadurch **gekennzeichnet**, daß die zumindest eine Düse (18) an dem Folieneingang (10) der Vakuumkammer (3) an der offenen Querseite (20) der einfach gefalteten Folie (7) angeordnet ist.
16. Verfahren zum Verpacken von Nahrungsmitteln oder technischen Materialien, die zwischen die in Längsrichtung gefalteten Teile einer einfach gefalteten Folie von einer offenen Seite der Folie aus einführbar sind, wobei das Verfahren die Schritte enthält:
 - a) Bereitstellen einer zu öffnenden/

verschließbaren Vakuumkammer (3) und von Mitteln zum Wärmekleben (11, 12, 15), die im wesentlichen L-förmig und zum Betrieb innerhalb der Vakuumkammer (3) angeordnet sind;

b) Positionieren zumindest einer Länge einer einfach gefalteten Folie (7) mit darin eingeführtem Material (2) in die geöffnete Vakuumkammer (3);

c) abdichtendes Verschließen der Vakuumkammer (3), wodurch die Folie eine taschenähnliche Form annimmt, und Erzeugen eines Vakuums und/oder einer geregelten Atmosphäre in der Kammer (3) und der einfach gefalteten Folie (7) durch zumindest eine Düse (18), die so angeordnet ist, daß sie bei Schließen der Kammer der offenen Längsseite (9) und/oder der offenen Querseite (20) der Folienlänge gegenübersteht, und/oder durch zumindest eine Strömungsverbindung (35, 36), die an eine Vakuumpumpe und/oder eine Gas- oder Gemischzufuhr angeschlossen ist;

d) Wärmeversiegeln der Folienlänge in der geschlossenen Kammer sowohl an der offenen Längsseite (9) als auch an den offenen Querseiten (19, 20) durch die Mittel zum Wärmekleben (11, 12, 15), um eine geschlossene Tasche oder einen geschlossenen Behälter zu erzeugen.

17. Verfahren nach Anspruch 16, wobei zum Schließen der drei offenen Seiten (9, 19, 20) der einfach gefalteten Folie (7) nacheinander die Mittel zum Wärmekleben betrieben werden, die aus einer an der Eingangsseite (10) der Kammer (3) quer zur Einführrichtung der Folie (7) angeordneten ersten Wärmeklebeschiene (11) und einer daran angrenzenden Schneidklinge (12) sowie einer zweiten Wärmeklebeschiene (15) bestehen, wobei die Schneidklinge (12) und die zweite Schiene (15) im wesentlichen L-förmig sind.

18. Verfahren nach Anspruch 17, dadurch **gekennzeichnet**, daß die zweite Wärmeklebeschiene (15) in Schritt d) das vollständige Verschließen der offenen Seiten der zumindest einen einfach gefalteten Folie (7) durchführt, um eine geschlossene Verpackung herzustellen.

19. Verfahren nach einem oder mehreren der Ansprüche 16 bis 18, dadurch **gekennzeichnet**, daß es zyklisch ist und für jeden Zyklus die Schritte des Einführens des Materials an der zweiten, offenen Längsseite (9) der Länge einfach gefalteter Folie (7), des Einführens der Folie mit dem darin enthaltenen Material in die Vakuumkammer (3) zwecks Erzeugen eines Vakuums und einer geregelten Atmosphäre, und des Wärmeversiegeln der Folie enthält.

20. Verfahren nach einem der Ansprüche 16 bis 19, dadurch **gekennzeichnet**, daß in Schritt c) zumindest in der in der Vakuumkammer (3) enthaltenen zumindest einen einfach gefalteten Folie (7) ein Vakuum und, fakultativ durch Einspritzen von Gas oder eines Gemisches, eine geregelte Atmosphäre erzeugt wird.

21. Verfahren nach einem der Ansprüche 16 bis 20, dadurch **gekennzeichnet**, daß das Vakuum in Schritt c) durch die zumindest eine Strömungsverbindung (35, 36) erzeugt wird, während die geregelte Atmosphäre durch die zumindest eine Düse (18) erzeugt wird.

Revendications

1. Dispositif de conditionnement, pour conditionner en particulier des denrées alimentaires ou des matériaux techniques pouvant être insérés entre les parties pliées longitudinalement d'un film plié une seule fois à partir d'un côté ouvert de celui-ci, le dispositif comportant des moyens de thermocollage (11, 12, 15) qui sont sensiblement en forme de L destinés à fermer de manière étanche le film à la fois au niveau du côté ouvert longitudinal (9) et au niveau des côtés transversaux (20) de celui-ci, et au moins une buse (18), pour produire du vide et/ou pour introduire un gaz ou un mélange, caractérisé en ce qu'il comporte de plus une chambre sous vide (3) qui peut être ouverte pour recevoir une longueur d'au moins un dit film plié une seule fois (7), un dit matériau (2) devant être conditionné y ayant été inséré, et respectivement, pouvant être fermée de manière étanche, après quoi la production de vide et/ou l'introduction de gaz ou d'un mélange peut être mise en oeuvre, ladite longueur de film prenant une configuration analogue à une poche, et en ce que lesdits moyens de thermocollage (11, 12, 15) sont positionnés pour fonctionner à l'intérieur de ladite chambre sous vide (3), ladite au moins une buse (18) étant placée au niveau de ladite chambre sous vide (3) de manière à être dirigée, lors de la fermeture de celle-ci, vers ledit côté ouvert longitudinal (9) et/ou lesdits côtés ouverts transversaux (20) de ladite longueur de film.

2. Dispositif selon la revendication 1, caractérisé en ce que ladite chambre sous vide (3) est constituée d'un conteneur inférieur (4) et d'un couvercle supérieur pouvant être fermé (5), les deux étant munis sur leur périmètre de premières bandes d'étanchéité ou joints (6).

3. Dispositif selon l'une quelconque des revendications 1 ou 2, caractérisé en ce que lesdits moyens de thermocollage comportent une première barre

de thermocollage (11), et adjacente à celle-ci, une lame de découpe (12) et une seconde barre de thermocollage (15), lesdites première et seconde barres de collage (11, 15) pouvant être actionnées à la suite pour fermer les trois côtés ouverts (9, 19, 20) dudit au moins un film plié une seule fois de manière à former au moins un sachet ou conteneur fermé.

4. Dispositif selon la revendication 3, caractérisé en ce que ladite première barre de thermocollage (11) est disposée transversalement à la direction d'insertion dudit film plié une seule fois (7), au niveau de la partie d'entrée de film (10) de ladite chambre sous vide (3).
5. Dispositif selon les revendications 1 et 4, caractérisé en ce que ladite lame de découpe (12) est sensiblement en forme de L, et est latéralement adjacente à ladite première barre de thermocollage (11).
6. Dispositif selon les revendications 1 et 5, caractérisé en ce que ladite lame de découpe (12) a une première aile (13) qui est latéralement adjacente à ladite première barre de thermocollage (11) et une deuxième aile (14) qui est disposée à angle droit par rapport à celle-ci.
7. Dispositif selon les revendications 1 et 6, caractérisé en ce que ladite seconde barre de thermocollage (15) est sensiblement en forme de L et est positionnée d'une manière adjacente par rapport à ladite lame de découpe (12).
8. Dispositif selon les revendications 1 et 7, caractérisé en ce que ladite seconde barre de thermocollage (15) a une troisième aile (16) qui est adjacente à ladite première aile (13) de ladite lame de découpe (12), et une quatrième aile (17), qui est adjacente à ladite deuxième aile (14) de ladite lame de découpe (12).
9. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce qu'il comporte au moins un trajet de connexion de fluide (35, 36) connectant une pompe à vide et/ou une alimentation en gaz/mélange à l'intérieur de ladite chambre (3), pour former un vide et/ou une atmosphère contrôlée à l'intérieur de ladite chambre sous vide (3).
10. Dispositif selon la revendication 9, caractérisé en ce qu'il comporte desdits premier (35) et second (36) trajets de connexion séparés pour former un vide et/ou injecter un gaz ou des mélanges à l'intérieur de ladite chambre sous vide (3), chacun desdits trajets (35, 36) ayant un capteur respectif (36a, 36b) prévu pour détecter et commander la pression à l'intérieur de ladite chambre sous vide (3) et/ou dudit film plié une seule fois (7).

11. Dispositif selon l'une quelconque des revendications 3 à 10, caractérisé en ce que lesdites première (11) et seconde (15) barres de thermocollage et ladite lame de découpe (12) sont associées avec au moins un support (50) qui est mobile à l'intérieur de ladite chambre (3) de manière à agir mutuellement avec des éléments d'opposition appropriés (51) associés à l'intérieur dudit couvercle (5).

12. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce que ladite au moins une buse (18) peut être hermétiquement insérée dans ladite chambre sous vide (3) et peut être extraite de celle-ci par l'action d'un piston approprié (31).

13. Dispositif selon les revendications 1 et 12, caractérisé en ce qu'il comporte de plus un presseur (32) qui est mobile à l'intérieur de ladite chambre sous vide (3) et qui est muni, au niveau d'une extrémité de celui-ci, d'une seconde bande d'étanchéité ou joint (33) agissant en opposition à une troisième bande d'étanchéité ou joint (34) agencée à l'intérieur dudit couvercle (5) pour assurer entre elles l'étanchéité dudit film (7) dans ladite configuration analogue à une poche.

14. Dispositif selon l'une quelconque des revendications 1, 3, 4, 12 et 13, caractérisé en ce que ladite au moins une buse (18) est disposée dans ladite chambre sous vide (3) au niveau du côté longitudinal ouvert (9) dudit film plié une seule fois (7) et est connectée à une alimentation en gaz ou en mélange.

15. Dispositif selon l'une quelconque des revendications 1, 3, 4, 12 et 13, caractérisé en ce que ladite au moins une buse (18) est disposée à la partie d'entrée de film (10) de ladite chambre sous vide (3) au niveau du côté transversal ouvert (20) dudit film plié une seule fois (7).

16. Procédé pour conditionner des denrées alimentaires ou des matériaux techniques pouvant être insérés entre les parties pliées longitudinalement d'un film plié une seule fois à partir d'un côté ouvert de celui-ci, le procédé comportant les étapes consistant à :

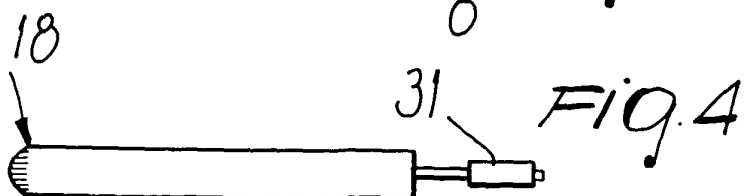
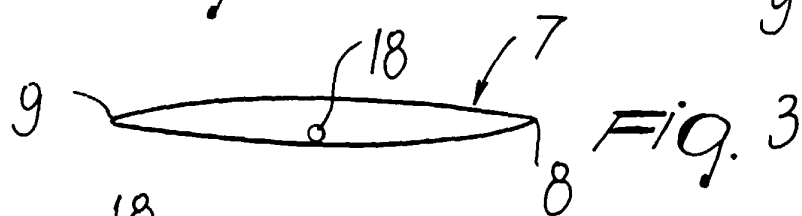
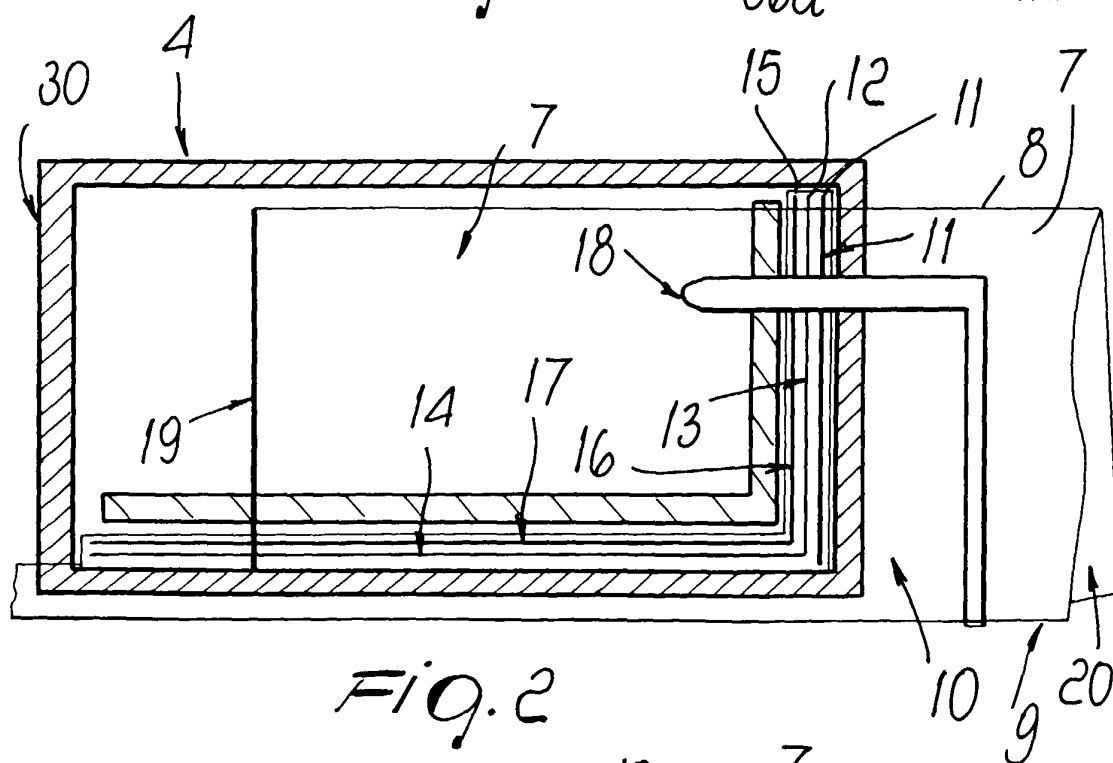
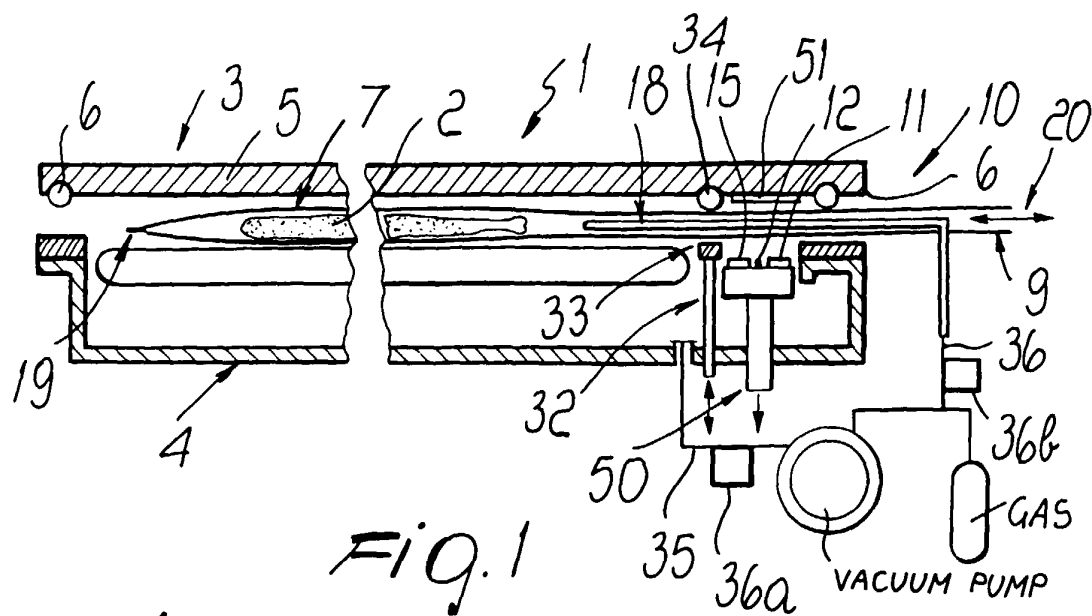
- a) fournir une chambre sous vide pouvant être ouverte/fermée et des moyens de thermocollage (11, 12, 15) qui sont sensiblement en forme de L et sont positionnés pour fonctionner à l'intérieur de ladite chambre sous vide (3),
- b) placer au moins une longueur d'un film plié une seule fois (7), un dit matériau (2) ayant été inséré dans celui-ci, dans ladite chambre sous vide (3), la chambre étant ouverte,

c) fermer de manière étanche ladite chambre sous vide (3), après quoi ledit film prend une configuration analogue à une poche, et former à l'intérieur de ladite chambre (3) et dudit film plié une seule fois (7) un vide et/ou une atmosphère contrôlée au moyen d'au moins une buse (18) placée de manière à être dirigée, lors de la fermeture de la chambre, vers les côtés ouverts longitudinal (9) et/ou transversal (20) de ladite longueur de film, et/ou connecté à travers au moins un trajet de connexion de fluide (35, 36) à une pompe à vide et/ou à une alimentation en gaz ou en mélange,

d) fermer de manière étanche à chaud ladite longueur de film à l'intérieur de ladite chambre fermée, à la fois au niveau du côté ouvert longitudinal (9) et au niveau des côtés transversaux (19, 20), au moyen desdits moyens de thermocollage (11, 12, 15), de manière à former un sachet ou conteneur fermé.

17. Procédé selon la revendication 16, comportant le fonctionnement à la suite, pour fermer les trois côtés ouverts (9, 19, 20) dudit film plié une seule fois (7), lesdits moyens de thermocollage qui sont constitués d'une première barre de thermocollage (11) positionnée au niveau du côté d'entrée (10) de la chambre (3) transversalement à la direction d'introduction du film (7), et adjacente à celui-ci, d'une lame de découpe (12) et d'une seconde barre de thermocollage (15), ladite lame de découpe (12) et ladite seconde barre (15) étant sensiblement en forme de L.
18. Procédé selon la revendication 17, caractérisé en ce que ladite seconde barre de collage (15) effectue durant l'étape d) la fermeture complète des côtés ouverts dudit au moins un film plié une seule fois (7) de manière à fournir un conditionnement fermé.
19. Procédé selon l'une quelconque des revendications 16 à 18, caractérisé en ce qu'il est cyclique, comportant pour chaque cycle l'étape consistant à insérer un dit matériau au niveau dudit second côté longitudinal ouvert (9) de ladite longueur de film plié une seule fois (7), insérer le film avec le matériau à l'intérieur dans ladite chambre sous vide (3) pour former sous vide et/ou atmosphère contrôlée, et fermer de manière étanche à chaud le film.
20. Procédé selon l'une quelconque des revendications 16 à 19, caractérisé en ce que lors de l'étape c), au moins à l'intérieur dudit au moins un film plié une seule fois (7) contenu dans ladite chambre sous vide (3), on produit un vide et facultativement, au moyen d'une injection de gaz ou de mélange, une atmosphère contrôlée.

21. Procédé selon l'une quelconque des revendications 16 à 20, caractérisé en ce que lors de l'étape c), le vide est produit à travers ledit au moins un trajet de connexion de fluide (35, 36), tandis que l'atmosphère contrôlée est produite au moyen de ladite au moins une buse (18).



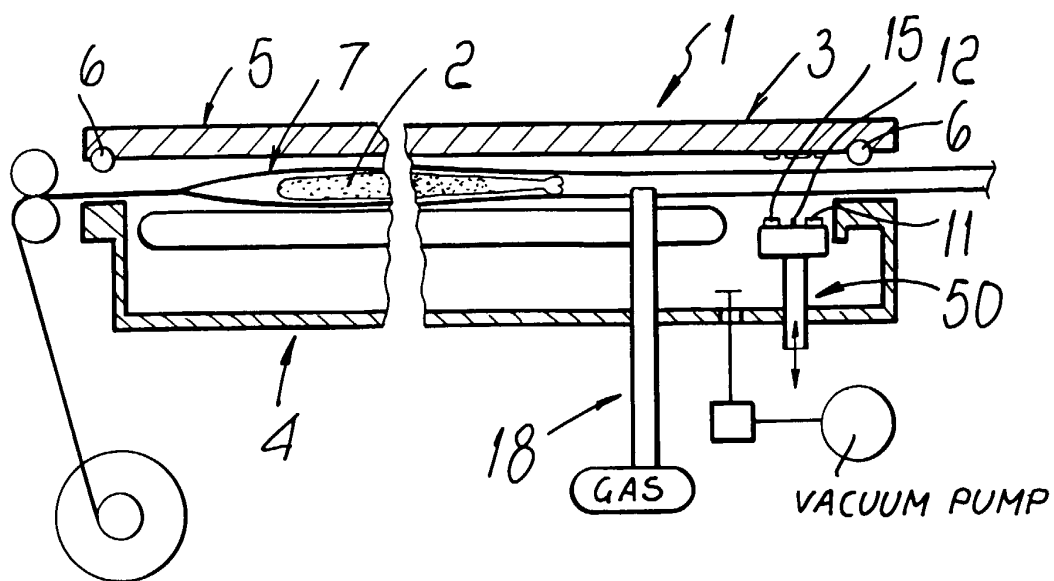


Fig. 5

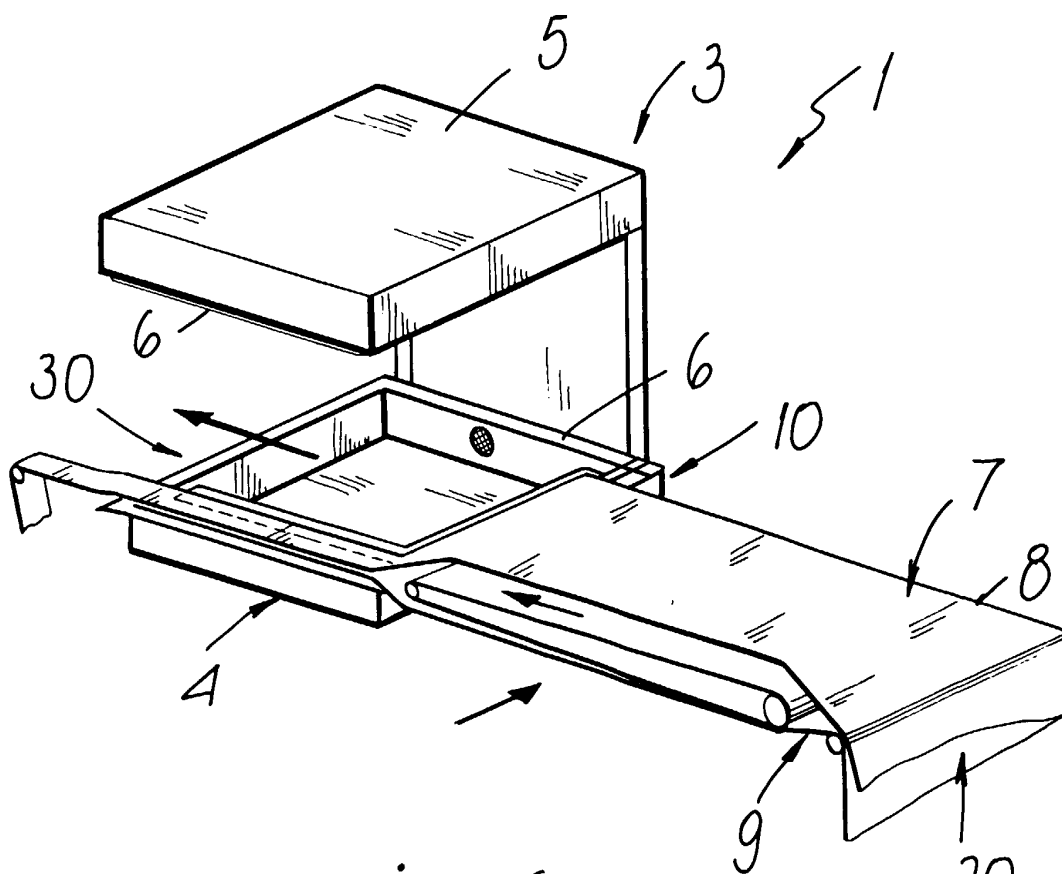


Fig. 6

