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(54) METHOD AND APPARATUS FOR PACKAGING BOTTLES

VERFAHREN UND VORRICHTUNG ZUM VERPACKEN VON FLASCHEN

PROCÉDÉ ET DISPOSITIF POUR EMBALLER DES BOUTEILLES

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(56) References cited:
DE-A1- 2 819 670 DE-A1-102010 000 381
US-A- 3 353 326 US-A- 3 916 597
US-A- 4 050 216

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Description

Technical Field

[0001] The present invention concerns a method and an apparatus for packaging bottles and a corresponding package.

Background Art

[0002] The arrangement of containers provided with an upper neck, generically called bottles in the following, in packs or bundles of a predetermined number of bottles wrapped in a film of heat shrink plastic material has been known, for example from US 3 353 326 A or DE 28 19 670 A1.

[0003] In the known methods for packaging bottles, the heat shrink plastic film is usually fed from a suitable apparatus, superimposed to the plurality of bottles to be packaged, closed at the lower side of the plurality of bottles by means of sealing and made shrinking by means of heat until firmly adhering to the packaged bottles, so as to give stability and resilience to the pack.

[0004] Such kind of packaging has a suitable shape and offers a suitable endurance, since the film firmly holds back the bottles, by adhering to their shape. Nevertheless, packaging by using heat shrink film is not free from drawbacks. Firstly, the high energy consumption connected with the use of the heat shrink film is complained. In fact, the use of such film entails the need of thermally treating the film both before the packaging step and during the packaging step to make it shrink around the containers to be packaged. Such high energy consumption is a non-negligible problem, since it affects the costs of extensively used products.

[0005] Another problem complained in known packs concerns the arrangement of the handle provided for transportation by hand. Such handle is usually applied transversally to the pack, that is on its long sides. From the producer's point of view, according to known solutions, since the handle is generally made of self-adhesive material combined with paper, a further suitable apparatus is required for attaching it, in spite of compactness and of production rates. From the user's point of view, as concerns in particular water bottle bundles, the handle is arranged so that, during transportation by hand, the hand has to rotate with respect to the arm, thus increasing the carrier's exertion. DE 10 2010 000381 A1 discloses a method and an apparatus for packaging bottles by means of a film of extensible material wherein the film material is extended along a longitudinal and along a transverse direction and the extended film material is wrapped about a bundle of bottles.

Disclosure

[0006] The task of the present invention is that of solving the aforementioned problems, devising a method that

allows to perform in an optimal way the packaging of bottles and the like, with a reduced energetic consumption.

[0007] Within such task, it is a further scope of the present invention that of providing a method assuring a stable wrapping of the bottles, so as to obtain a solid pack.

[0008] A further scope of the invention is that of providing a package made through said method for packaging bottles, said package further comprising a handle.

[0009] A further scope of the invention is that of providing an apparatus for carrying out the mentioned method, having a simple conception, a surely reliable structure, a versatile use and a relatively low cost.

[0010] The cited scopes are attained, according to the present invention, by the method for packaging bottles comprising the features of claim 1, by the features of the apparatus according to claim 4, and by the features of the package according to claim 7.

[0011] According to the present invention, the method provides to wrap about a plurality of bottles a film of extensible material provided with a plurality of holes, each hole being suitable to be inserted about a convergent end portion of a respective bottle.

Description of Drawings

[0012] Details of the invention shall be more apparent from the detailed description of a preferred embodiment of the apparatus for packaging bottles according to the method object of the invention, illustrated for indicative purposes in the attached drawings, wherein:

figures 1a, 1b, 1c and 1d show a perspective view of different embodiments of a package produced according to the claimed method;

figure 2 shows a perspective view of part of the apparatus for packaging bottles according to the invention;

figure 3 shows a side view of the apparatus shown in figure 2;

figure 4 shows a plan view of the apparatus shown in figure 2;

figure 5 shows a side view of a different part of the apparatus in object;

figure 6 shows a cross-section view of the apparatus shown in figure 5, according to the line VI - VI;

figure 7 shows a perspective view of a further part of the apparatus in object;

figure 8 shows a side view of the apparatus shown in figure 7;

figures 9 - 12 show a cross-section view of the bottles during different operating steps, respectively according to lines IX - IX, X - X, XI - XI and XII - XII in figure 8;

figure 13 shows a perspective view of a different part of the apparatus object of the invention;

figure 14 shows a plan view of the apparatus shown in figure 13;

figure 15 shows a side view of a different embodi-

ment of the part of the apparatus shown in figure 8; figure 16 shows a perspective view of a different embodiment of the part of the apparatus shown in figure 13.

Best Mode

[0013] With particular reference to such figures, the packaging made through the method for packaging bottles 2 according to the invention is indicated in its entirety with 1. In particular the bottles 2 have a substantially cylindrical body 3, provided on the top with a convergent end portion converging towards one end 5 having a section with diameter size smaller than the diameter of the cylindrical body 3. Preferably, the end 5 comprises a neck suitable to be closed by a cap (see figures 1a and 1b).

[0014] In the shown example, the packaging method is applied to bottles 2, but it is to be noted that the method in object is also suitable for packaging any container provided with one end portion having radial size smaller than the body.

[0015] The pack 1 according to the present invention comprises a film 7 of extensible material wrapped about a predetermined plurality of bottles 2; preferably, the film 7 is of extensible material of the type of polyethylene. The film is provided with a plurality of holes 8, through which it is inserted, passing, the neck 5 of respective bottles 2. In this way the necks 5 of the bottles 2 protrude outside the film 7 of extensible material wrapped about the same bottles.

[0016] In particular, it is preferable that the holes 8 have a diameter slightly smaller than the diameter of the neck 5 so as to be tightened around the connection portion 4, at a height as close as possible to the neck 5, as it is shown in figures 1a, 1b, 1c and 1d.

[0017] More in detail, the package 1 has an upper surface 1a, on which the above mentioned holes 8 are made and from which the necks 5 of the bottles 2 protrude, a lower surface 1b, two longitudinal surfaces 1c substantially parallel to each other and two transversal surfaces 1d substantially parallel to each other and perpendicular to the longitudinal surfaces 1c.

[0018] In a second embodiment, shown in figure 1b, the package 1 is provided with a handle grip element 9, made of a band of plastic material, for example of high density polyethylene, connected to the film 7 at its ends. More in particular, each end of the handle 9 is connected at the upper zone of a respective transversal surface 1d. Preferably, the handle is connected to the film 7 of extensible material by means of sealing, but it is possible to provide other kinds of connection which allow to hold the weight of the packaged bottles during transportation by hand.

[0019] It is to be noted that in the example shown in figures 1a and 1b the longitudinal surfaces 1c of the pack are entirely covered by the film 7 of extensible material, while the transversal surfaces 1d have a substantially central zone not covered by the same film 7. It is anyway

possible to provide the package to be completely closed at the transversal surface 1d, so as to assure a better grip of the handle 9, as it is shown in figures 1c and 1d.

[0020] The apparatus for packaging bottles 2 with the described package comprises a feed plane 10 on which a plurality of bottles 2 are made advancing according to a feed direction A, suitably rectilinear (see figure 2 and 3). Preferably, the feed plane 10 is arranged horizontal so as to convey the bottles 2 preventing them from falling. In known way the bottles 2 are firstly fed according to a continuous flow along two lines arranged side by side, in uninterrupted succession, and are then separated in groups of a pre-established number of bottles 2, so as to create a bundle. In the illustrated example, the bottles 2 are separated in six-bottles bundles, but it is obviously possible to provide bundles having a different number of bottles according to the exigencies.

[0021] The separation of the bottles in bundles is performed at a separating station 11 (see figure 5), arranged at the feed plane 10, comprising a separating device 12, suitable to perform the separation of the bundles, and an adjustment device 13, arranged directly downstream of the separating device 12 and suitable to adjust the distance between two following bundles. Preferably, the adjustment device comprises an endless belt provided with separators and operated in continuous motion (see figure 5). The operating members of the separating station 11 are operated so as to perform the separation of bottles 2 without needing to interrupt the continuous feeding flow of the bottles 2.

[0022] The apparatus according to the invention also provides feed means 20 for the film 7 of extensible material, arranged so as to feed the film 7 along a feed path B substantially longitudinal to the feed direction A of the bottles 2 (figures 2, 3 and 4). Usually the above-mentioned feed means 20 are made by a coil from which the film 7 of extensible material is unwound, but it is possible to provide any feed means 20.

[0023] It is to be noted that, in the illustrated case, the feed path B of the film is arranged above the feed plane 10 of the bottles, so as to keep the film 7 substantially parallel to the same feed plane 10. It is anyway possible to provide that the feed path B is differently oriented, providing that the orientation of the film 7 maintains an orientation so as to have a surface turned towards the bottles 2 fed along the feed direction A.

[0024] Downstream of the coil 20, extension means 21 suitable to perform the extension of the film 7 of extensible material are arranged. In particular, the extension means 21 comprise longitudinal extension means 21a followed by transversal extension means 21b (see figures 2, 3 and 4).

[0025] Longitudinal extension means 21a preferably comprise a first couple of counter rotating endless belts 210, operated at a predetermined speed so as to draw the film 7 unwinding from the coil 20, and a second couple of endless belts 211 arranged directly downstream of the first couple of endless belts 210 and operated at a speed

higher than the speed of the latter. Such speed difference in the drawing of the film 7 produces its extension in longitudinal direction. Preferably, the endless belts 210, 211 have a width substantially equal to the width of the film 7 to be extended, so as to perform a substantially homogeneous extension on the whole length of the film 7 (see figures 2 and 4).

[0026] In the illustrated case, longitudinal extension means 21a are arranged along a rectilinear section, inclined with respect to the feed direction A of the bottles 2, being the inclined section delimited at one side by a support roll 22, arranged between the coil 20 and the endless belts 210, and by drawing means 23 made by a couple of counter rotating rolls arranged between the endless belts 211 and the transversal extension means 21b (see figures 2 and 3). However, it is possible to provide that such section is not inclined with respect to the feed direction A, thus making optional the presence of the support roll 22 and of the drawing means 23.

[0027] The transversal extension means 21b preferably comprise two couples of counter rotating endless belts 212, 213 arranged at the longitudinal edges 70 of the film 7 of extensible material and wide opened so as to perform an extension of the length of the film 7 while advancing.

[0028] More in detail, the respective edges of the couples of endless belts 212, 213 turned towards the longitudinal extension means 21a are arranged at the longitudinal edge 70 of the film 7 so as to engage a respective longitudinal edge 70. The couples of endless belts 212, 213 are arranged wide open towards the feed direction of the film 7, so as to progressively perform the transversal extension of the film 7. It is preferable that the two couples of endless belts 212, 213 are symmetrical to each other with respect to the longitudinal median axis of the film 7 so as to obtain a homogeneous and regular transversal extension. Obviously, the angle created between the two couples of belts 212, 213 as well as their length determine the extension stress applied to the film 7 of extensible material.

[0029] At the exit from the transversal extension means 21b, the film 7 results both longitudinally and transversally extended.

[0030] The apparatus according to the invention also provides a piercing device 24 arranged along the feed path B of the film 7, downstream of the extension means 21 (see figures 5 and 6). Such piercing device 24 is suitable to perform the piercing of the film 7 so as to obtain the above mentioned holes 8 of the package 1.

[0031] The piercing device 24 preferably comprises a punch device, provided with a suitable punch 25 and with a corresponding matrix 26. The punch 25 and the matrix 26 are able to make a plurality of holes 8 corresponding to a multiple of the number of bottles 2 in each bundle. For example, in the illustrated case the piercing device 24 performs two sets of six holes for each set, which correspond to two successive bundles separated by a distance that corresponds to the distance obtained be-

tween two bundles of bottles 2 through the adjustment device 13 (see figures 5 or 6).

[0032] It is to be observed that the apparatus in object preferably provides second drawing means 23 arranged between the transversal extension means 21b and the piercing device 24, so as to perform the feeding of the film 7 keeping in an efficient way the extension of this latter.

[0033] Preferably, further drawing means 23 are provided at the exit of the piercing device 24 for performing the continuous feeding of the perforated film 7.

[0034] As an alternative, it is possible to provide the use of a suitably perforated coil of film 7. Obviously, in this case the apparatus does not include the piercing device 24.

[0035] Subsequently, the perforated film 7 is wrapped about the flow of bottles 2 at a wrapping station 27, in which the feed path B of the film 7 ends thus reaching the flow of bottles 2 fed on the feed plane 10 (see figures 7 and 8). The wrapping station 27 preferably comprises suitable guide means 28 arranged along the feed direction A of the bottles and having a first portion 28a substantially parallel to the feed direction A, so as to progressively go with the film 7 towards the flow of bottles 2.

[0036] Preferably, the guide means 28 have a width lesser than the width of the film 27, as can be seen in figures 7 and 8, so as to allow the progressive folding of the film 7 due to the force of gravity (see figures 9 - 12). It is to be noted that at the exit from the wrapping station, the side edges 73 are overlapped to one another so as to be subsequently united (see in particular figure 12). Such overlapping of the side edges 73 is made beneath the feed plane 10. In this way the film 7 shapes a continuous tube containing the flow of bottles 2.

[0037] The apparatus in object provides as well a longitudinal closure device 29 arranged along the feed direction A directly downstream of the above mentioned wrapping station 27, at the bottles surface 2 at which the side edges 73 of the film 7 are arranged, so as to perform the longitudinal closure of the film 7 around the bottles 2 acting on the above mentioned side edges 73 (figures 13 and 14). In particular, the longitudinal closure device 29 has preferably an elongated shape and is arranged longitudinally to the feed direction A so as to act on a maximal length of the side edges 73. The closure device 29 is suitable to join together the two side edges 73 overlapped, preferably by means of sealing.

[0038] Downstream of the longitudinal closure device 29 along the feed direction A, a seal and cut station 30 is provided, in which the transversal sealing and the transversal cutting of the film 7 are performed at the same time through suitable transversal sealing and cutting means 31. Such transversal sealing and cutting means 31 can be operated between an open configuration, suitable to allow the free passage of the wrapped bottles 2, and a closed configuration in which it performs simultaneously the sealing and the cutting of the film 7, at a section located between two bundles of bottles 2 (see

figure 14).

[0039] In a second embodiment, the apparatus in object also comprises longitudinal feed means 40 of a band 41 intended to be applied longitudinally on the upper part of the bundles of bottles 2, in order to be used as gripplement 9, as previously described (figure 15).

[0040] According to the present invention, the feed means 40, which are preferably made up by a coil, are arranged at the wrapping station 27 and externally to the feed path B so as to put the band 41 upon the film 7 substantially at the first section 28a of the guide means 28. For example, in the illustrated case, being the path B arranged above the flow of bottles 2, the coil 40 is arranged above the feed path B.

[0041] The method for wrapping bottles according to the invention is easy to understand from the preceding description.

[0042] The bottles 2 are fed on the feed plan 10 along the feed direction A. The feeding of the bottles 2 is performed in a continuous manner, thus making an endless flow of bottles 2. Such endless flow is fed towards the separating station 11, in which it is separated in bundles. In the illustrated case, each bundle comprises six bottles, arranged into two lines of 3 bottles (see figures 5 and 6).

[0043] At the same time, the film 7 of extensible material is fed along the feed path B, arranged longitudinally to the feed direction A.

[0044] Preferably, the feed path B is arranged above the feed path 10, being the film 7 horizontally fed, so as to result substantially parallel to the same feed plane 10 and longitudinally centred with respect to the feed direction A. It is possible to provide a different arrangement of the feed path B with respect to the feed path 10, providing that the film 7 is fed with a surface turned towards the flow of bottles 2.

[0045] The film 7 of extensible material is unwound from a coil 20 and made passing through the longitudinal extension means 21a through which it is extended in longitudinal direction. In particular, the longitudinal extension of the film 7 is due to the speed difference between the speeds at which the first couple of endless belts 210 and the second couple of endless belts 211 are operated. The first couple of endless belts 210 is operated at a speed lower than the operating speed of the second couple of endless belts 211 (see figures 2, 3 and 4).

[0046] The longitudinally extended film 7 subsequently passes through the transversal extension means 21b, arranged at the exit of the above mentioned longitudinal extension means 21a, so as to be transversally extended. Such transversal extension is due to the open configuration of the couples of endless belts 212, 213 which engage the longitudinal sides 70 of the film 7.

[0047] Subsequently, the film 7 is pierced through the piercing device 24, so as to be provided with a plurality of holes 8 which correspond to the plurality of bottles 2 which constitute a bundle, or a multiple number of bundles.

[0048] As can be seen in figures 5 and 6, in the illus-

trated case, the piercing device 24 consists of a punching device operated through a tracking and coupling system so as to perform in a continuous manner the piercing of the film 7, without interrupting the feeding, and operating at pitch with the flow of bottles bundles 2.

[0049] It is to be noted that, in the case illustrated as an example, the piercing of the film 7 is substantially performed above the separating station 11 and at the same time of the separation of the bottles 2 in bundles (see in particular figure 5). It is possible to provide the separation of the bottles 2 before or after the piercing of the film 7 of extensible material.

[0050] It is important to point out that the feed speed of the film 7 must be substantially equal to the feed speed of the bottles 2, so as to be able to align the holes 8 with the necks 5 of the bottles 2 before reaching the wrapping station.

[0051] After the piercing of the film 7, this latter is fed towards the wrapping station 27 (see figure 8) in which it passes on the suitable guide means 28, so as to be progressively folded up around the flow of bottles 2. In particular, the film 7 firstly reaches the first section 28a of the guide means 28, on which it is supported only at a central zone 71, leaving the longitudinal sides 70 falling under the gravity effect (see figure 9). Such falling produces a progressive folding of the film 7. At the second section 28b of the guide means, the falling of the film 7 allows to progressively increase the folding of the film 7, until obtaining the film 7 to be supported on the upper surface of the bottles 2, thus shaping two side zones 72, which come in contact with the lateral surfaces of the bottles 2, and two side edges 73, which correspond to the longitudinal zone of the film 7 contiguous to the longitudinal border 70 (see figures 10 and 11).

[0052] Feeding the film 7 and the bottles 2 at the same speed with the holes 8 aligned with the necks 5 of the bottles 2 entails that, when the film 7 is in support on the bottles 2, the holes 8 are automatically inserted around the neck of a respective bottle 2.

[0053] The arrangement of the feed path B of the film 7 above the flow of bottles 2 allows to perform the longitudinal folding of the film 7 through the action of the force of gravity. It is also possible to provide to arrange the feed path B at a different side of the flow of bottles 2, providing further longitudinal guides suitable to perform the longitudinal folding of the film 7 about the bottles 2.

[0054] At the exit from the wrapping station 27 the side edges 73 are folded on one another at the lower surface of the bottles 2, beneath the feed plane 10 (see figure 12). The film 7 substantially has a tube-shaped profile wrapped around the flow of bottles 2.

[0055] The side edges 73 are subsequently united to one another for operating the longitudinal closure of the film 7 about the bundles, at the longitudinal closure device 29 (see figures 13 and 14). Preferably, such longitudinal closure is performed by sealing the side edges 73. The film 7 is then transversally sealed and cut, in a simultaneous manner, at portions located between two bundles

of bottles 2. In such way, bundles of bottles 2 wrapped in the pack 1 are obtained, according to the present invention.

[0056] In figures 15 and 16 a different embodiment of the method in object is shown, in which at the beginning of the winding step of the film 7 about the bottles 2 the tape 41 of plastic material (see figure 15) is longitudinally applied, and subsequently cut and sealed to the pack 1 in the step of transversal closure and cut of the film 7 (see figure 16).

[0057] The described method attains the scope of performing in an optimal manner the packaging of bottles and the like, with a reduced energetic consumption. Such a result is obtained in particular thanks to the inventive idea of using, for the packaging, a film of extensible material of the type of polyethylene. As a matter of fact, the use of such material avoids the need of heat treatments to which the heat shrink material usually used for packaging bottles must be submitted.

[0058] A characteristic of the method in object and of the pack obtained accordingly, is that bottles are firmly kept through the insertion of the respective necks in the corresponding holes made on the film of extensible material. In practice, the possible displacement of a bottle does not transfer to the other bottles of the bundle.

[0059] Another advantage of the method in object and of the so-obtained package, is that the film of extensible material is lighter than the film of heat shrink material and it has a substantially equal unitary cost. Its use results then less expensive than the use of the heat shrink material.

[0060] Substantially, the method in object allows to overcome the technical prejudice according to which, for packaging bottles and the like, heat shrink material is generally used. The use of a film of extensible material according to the method in object allows to obtain a stable and enduring packaging with an evident saving in costs and energy.

[0061] The method and apparatus in object also allow to provide the package according to the invention with a handle during the packaging of bottles, without requiring the use of a supplementary apparatus. Moreover, the handle results longitudinally turned towards the package allowing an easier grip for the user who can lift the bundle by keeping the hand in a natural position, without turning the wrist.

[0062] In practice, the embodiment of the invention, the materials used, as well as the shape and dimensions, may vary depending on the requirements.

[0063] Should the technical characteristics mentioned in each claim be followed by reference signs, such reference signs were included strictly with the aim of enhancing the understanding the claims and hence they shall not be deemed restrictive in any manner whatsoever on the scope of each element identified for exemplifying purposes by such reference signs.

Claims

1. Method for packaging bottles, by means of a film (7) of plastic material wrapped about a plurality of bottles (2) arranged in bundles, said film (7) being made of extensible material and presenting an ordered plurality of holes (8), providing for inserting in said holes (8) a respective end portion (4) of said bottles (2) arranged in bundles, so that the same end portion (4) is protruding towards the outside of the packaging wherein it provides for extending said film (7) along a longitudinal direction and along a transverse direction with respect to a feed path (B) of said film (7), said step of extending said film (7) along said transverse direction comprising the step of engaging the longitudinal sides (70) of the film (7) by transverse extension means (21b) comprising two couples of counter rotating endless belts (212, 213) having a diverging configuration and in that no heat treatments are used to treat said extensible material.
2. Method according to claim 1, wherein it comprises the steps of:
 - a. feeding a plurality of bottles (2) according to a feed direction (A);
 - b. at the same time feeding a film (7) of extensible material, presenting an ordered plurality of holes (8), along said feed path (B) substantially longitudinal to said feed direction (A), and at a rate substantially equal to the rate at which said plurality of bottles (2) is fed;
 - c. progressively folding said extended and holed film (7) of extensible material about said plurality of bottles (2) in a way as to shape a tube wrapped about said plurality of bottles (2), arranging each of said holes (8) about one said end portion (4) of a respective bottle (2);
 - d. performing the closure of said film (7) of extensible material in a direction longitudinal to said feed direction (A);
 - e. performing the closure of said film (7) of extensible material in a direction transverse to said feed direction (A);
 - f. at the same time of said closure in transverse direction, performing the cut of said film (7) of extensible material in a direction transverse to said feed direction (A).
3. Method according to claim 2, wherein it provides, between said steps b. and c., the further step of:
 - b1. applying to said film (7) of extensible material a band (41) of plastic material in a direction longitudinal to said feed direction (A).
4. Apparatus for packaging bottles, by means of a film (7) of plastic material wrapped about a plurality of bottles (2) arranged in bundles, said film (7) being

made of extensible material and having an ordered plurality of holes (8), comprising a wrapping station (27) wherein said film (7) of extensible material is wrapped about said plurality of bottles (2) in a way as to insert an end portion (4) of said bottles (2) in one respective of said holes (8) so that the same end portion (4) is protruding towards the outside of the packaging, wherein it comprises a feed plane (10) whereon a plurality of bottles (2) is fed according to a feed direction (A); means (20) for feeding a film (7) of extensible material, arranged in a way as to perform the feed of said film (7) of extensible material along a feed path (B) substantially parallel to said feed direction (A);

extension means (21) arranged downstream of said feed means (20) along said feed path (B), and suitable to perform the extension of said film (7) of extensible material, said extension means (21) comprising longitudinal extension means (21a), suitable to perform the extension of said film (7) in a direction longitudinal to said feed path (B), and transverse extension means (21b), arranged downstream of said longitudinal extension means (21a), and suitable to perform the extension of said film (7) in a direction transverse to said feed path (B), said transverse extension means (21b) comprising two couples of counter rotating endless belts (212, 213) arranged at the longitudinal edges (70) of said film (7) and diverging so as to perform an extension of the length of said film (7) in advancement;

a wrapping station (27) arranged on said feed plane (10) along said feed direction (A), wherein said film (7) of extensible material is folded about said plurality of bottles (2) in a way as to shape a tube wrapped about said plurality of bottles, arranging each of said holes (8) about one said end portion (4) of a respective bottle (2);

longitudinal closure means (29) arranged at the outlet of said wrapping station (27) along said feed direction (A), suitable to perform the closure of said film (7) of extensible material;

a seal and cut station (30) arranged downstream of said longitudinal closure means (29), and suitable to perform at the same time the closure and the cut of said film (7) of extensible material in a direction transverse to said feed direction (A).

5. Apparatus according to claim 4, wherein it comprises, at the inlet of said wrapping station (27), longitudinal feed means (40) for feeding a band (41) of plastic material suitable to be applied to said film (7) of extensible material in a direction longitudinal to said feed direction (A).
6. Apparatus according to claim 4, wherein it comprises piercing means (24) arranged downstream of said extension means (21) along said feed path (B), and suitable to perform said ordered plurality of holes (8)

on said film (7) of extensible material.

7. Package for packaging bottles, the package being made through the method according to one of claims 1 to 3, comprising a film (7) of plastic material wrapped about a plurality of bottles (2) arranged in bundles, said film (7) being made of extensible material and having an ordered plurality of holes (8) through which an end portion (4) of said bottles (2) is protruding outwards of the packaging, wherein it further comprises a longitudinal band (41) of plastic material suitable to serve as a grip element (9) for the transport by hand.

Patentansprüche

1. Verfahren zum Verpacken von Flaschen mittels einer Folie (7) aus Kunststoffmaterial, die um eine Vielzahl von Flaschen (2), die in Bündeln angeordnet sind, gewickelt wird, wobei die Folie (7) aus einem streckbaren Material besteht und eine geordnete Vielzahl von Löchern (8) präsentiert, das Einführen eines jeweiligen Endabschnitts (4) der Flaschen (2), die in Bündeln angeordnet sind, in die Löcher (8) derart vorsieht, dass derselbe Endabschnitt (4) zur Außenseite der Verpackung vorsteht, wobei es das Strecken der Folie (7) entlang einer Längsrichtung und entlang einer Querrichtung mit Bezug auf einen Zuführungspfad (B) der Folie (7) vorsieht, wobei der Schritt des Streckens der Folie (7) entlang der Querrichtung den Schritt des Greifens der Längsseiten (70) der Folie (7) durch ein Querstreckmittel (21b) umfasst, das zwei Paare von gegenläufig rotierenden Endlosbändern (212, 213) mit einer divergierenden Auslegung umfasst, und darin, dass zum Behandeln des streckbaren Materials keine Wärmebehandlungen verwendet werden.
2. Verfahren nach Anspruch 1, wobei es die folgenden Schritte umfasst:
 - a. Zuführen einer Vielzahl von Flaschen (2) gemäß einer Zuführrichtung (A);
 - b. gleichzeitiges Zuführen einer Folie (7) aus streckbarem Material, die eine geordnete Vielzahl von Löchern (8) präsentiert, entlang des Zuführungspfads (B) im Wesentlichen längs zur Zuführrichtung (A) und mit einer Rate, die der Rate, mit der die Vielzahl von Flaschen (2) zugeführt wird, im Wesentlichen gleich ist;
 - c. schrittweises Falten der gestreckten und mit Löchern versehenen Folie (7) aus streckbarem Material um die Vielzahl von Flaschen (2) in einer Weise, dass ein Schlauch geformt wird, der um die Vielzahl von Flaschen (2) gewickelt ist, wobei jedes der Löcher (8) um einen Endabschnitt (4) einer jeweiligen Flasche (2) an-

- geordnet wird;
d. Durchführen des Schließens der Folie (7) aus streckbarem Material in einer Richtung längs zur Zuführrichtung (A);
e. Durchführen des Schließens der Folie (7) aus streckbarem Material in einer Richtung quer zur Zuführrichtung (A);
f. gleichzeitig mit dem Schließen in Querrichtung Durchführen des Schneidens der Folie (7) aus streckbarem Material in einer Richtung quer zur Zuführrichtung (A).
3. Verfahren nach Anspruch 2, wobei es zwischen den Schritten b. und c. den weiteren folgenden Schritt bereitstellt:
b1. Anbringen eines Bandes (41) aus Kunststoffmaterial an der Folie (7) aus streckbarem Material in einer Richtung längs zur Zuführrichtung (A).
4. Vorrichtung zum Verpacken von Flaschen mittels einer Folie (7) aus Kunststoffmaterial, die um eine Vielzahl von Flaschen (2), die in Bündeln angeordnet sind, gewickelt wird, wobei die Folie (7) aus einem streckbaren Material besteht und eine geordnete Vielzahl von Löchern (8) aufweist, das eine Wickelstation (27) umfasst, wobei die Folie (7) aus streckbarem Material in einer Weise um die Vielzahl von Flaschen (2) gewickelt wird, dass ein Endabschnitt (4) der Flaschen (2) in ein jeweiliges der Löcher (8) eingeführt wird, derart, dass derselbe Endabschnitt (4) zur Außenseite der Verpackung vorsteht, wobei es Folgendes umfasst
eine Zuführebene (10), auf der eine Vielzahl von Flaschen (2) gemäß einer Zuführrichtung (A) zugeführt wird; ein Mittel (20) zum Zuführen einer Folie (7) aus streckbarem Material, das in einer Weise angeordnet ist, dass es die Zuführung der Folie (7) aus streckbarem Material entlang eines Zuführungspfads (B) im Wesentlichen parallel zur Zuführrichtung (A) durchführt;
ein Streckmittel (21), das stromabwärtig vom Zuführmittel (20) entlang des Zuführungspfads (B) angeordnet und geeignet ist, die Streckung der Folie (7) aus streckbarem Material durchzuführen, wobei das Streckmittel (21) ein Längsstreckmittel (21a), das geeignet ist, die Streckung der Folie (7) in eine Richtung längs zum Zuführungspfad (B) durchzuführen, und ein Querstreckmittel (21b), das stromabwärts vom Längsstreckmittel (21a) angeordnet und geeignet ist, die Streckung der Folie (7) in eine Richtung quer zum Zuführungspfad (B) durchzuführen, umfasst, wobei das Querstreckmittel (21b) zwei Paare von gegenläufig rotierenden Endlosbändern (212, 213) umfasst, die an den Längsrändern (70) der Folie (7) angeordnet sind und derart divergieren, dass sie eine Streckung der Länge der Folie (7) beim Befördern durchführen;
eine Wickelstation (27), die auf der Zuführebene (10)
- entlang der Zuführrichtung (A) angeordnet ist, wobei die Folie (7) aus streckbarem Material in einer Weise um die Vielzahl von Flaschen (2) gefaltet wird, dass ein Schlauch geformt wird, der um die Vielzahl von Flaschen gewickelt ist, wobei jedes der Löcher (8) um einen Endabschnitt (4) einer jeweiligen Flasche (2) angeordnet wird;
ein Längsschließmittel (29), das am Auslass der Wickelstation (27) entlang der Zuführrichtung (A) angeordnet ist, geeignet, das Schließen der Folie (7) aus streckbarem Material durchzuführen;
eine Versiegelungs und Schneidestation (30), die stromabwärtig vom Längsschließmittel (29) angeordnet und geeignet ist, gleichzeitig das Schließen und das Schneiden der Folie (7) aus streckbarem Material in einer Richtung quer zur Zuführrichtung (A) durchzuführen.
5. Vorrichtung nach Anspruch 4, wobei es am Einlass der Wickelstation (27) ein Längszuführmittel (40) zum Zuführen eines Bandes (41) aus Kunststoffmaterial, das geeignet ist, in einer Richtung längs zur Zuführrichtung (A) an der Folie (7) aus streckbarem Material angebracht zu werden, umfasst.
6. Vorrichtung nach Anspruch 4, wobei es ein Durchstoßmittel (24) umfasst, das stromabwärtig vom Streckmittel (21) entlang des Zuführungspfads (B) angeordnet und geeignet ist, die geordnete Vielzahl von Löchern (8) auf der Folie (7) aus streckbarem Material durchzuführen.
7. Verpackung zum Verpacken von Flaschen, wobei die Verpackung mittels des Verfahrens nach einem der Ansprüche 1 bis 3 durchgeführt wird und eine Folie (7) aus Kunststoffmaterial umfasst, die um eine Vielzahl von Flaschen (2), die in Bündeln angeordnet sind, gewickelt wird, wobei die Folie (7) aus einem streckbaren Material besteht und eine geordnete Vielzahl von Löchern (8) aufweist, durch die ein Endabschnitt (4) der Flaschen (2) nach außen durch die Verpackung vorsteht, wobei sie ferner ein längliches Band (41) aus Kunststoffmaterial umfasst, das geeignet ist, als Griffelement (9) für den Transport von Hand zu dienen.

Revendications

1. Méthode d'emballage de bouteilles, au moyen d'un film (7) en matière plastique envelopper autour d'une pluralité de bouteilles (2) disposées en paquets, ledit film (7) étant en matériau extensible et présentant une pluralité ordonnée de trous (8), pour insérer dans lesdits trous (8) une respective portion d'extrémité (4) desdites bouteilles (2) disposées en paquets, de sorte que la même portion d'extrémité (4) fasse saillie vers l'extérieur de l'emballage où elle

envisage l'extension dudit film (7) le long d'une direction longitudinale et le long d'une direction transversale par rapport à un chemin d'alimentation (B) dudit film (7), ladite étape d'extension dudit film (7) le long de ladite direction transversale comprenant l'étape d'engagement des côtés longitudinaux (70) du film (7) par un moyen d'extension transversale (21b) comprenant deux couples de courroies sans fin contrarotatives (212, 213) ayant une configuration divergente et en ce on n'utilise aucun traitement thermique pour traiter ledit matériau extensible.

2. Méthode selon la revendication 1, où elle comprend l'étape consistant à :

- a. alimenter une pluralité de bouteilles (2) selon une direction d'alimentation (A) ;
- b. alimenter en même temps un film (7) en matériau extensible, présentant une pluralité ordonnée de trous (8), le long dudit chemin d'alimentation (B) substantiellement longitudinal à ladite direction d'alimentation (A), et à une vitesse substantiellement égale à la vitesse à laquelle ladite pluralité de bouteilles (2) est alimentée ;
- c. plier progressivement ledit film étendu et perforé (7) en matériau extensible autour de ladite pluralité de bouteilles (2) de manière à former un tube enveloppé autour de ladite pluralité de bouteilles (2), en disposant chacun desdits trous (8) autour d'une dite portion d'extrémité (4) d'une respective bouteille (2) ;
- d. effectuer la fermeture dudit film (7) en matériau extensible dans une direction longitudinale par rapport à ladite direction d'alimentation (A) ;
- e. effectuer la fermeture dudit film (7) en matériau extensible dans une direction transversale par rapport à ladite direction d'alimentation (A) ;
- f. pendant ladite fermeture dans une direction transversale, effectuer la coupure dudit film (7) en matériau extensible dans une direction transversale par rapport à ladite direction d'alimentation (A).

3. Méthode selon la revendication 2, où elle envisage, entre lesdites étapes b. et c., l'étape supplémentaire consistant à :

- b1. appliquer audit film (7) en matériau extensible une bande (41) en matière plastique dans une direction longitudinale par rapport à ladite direction d'alimentation (A).

4. Appareil pour emballer des bouteilles, au moyen d'un film (7) en matière plastique enveloppé autour d'une pluralité de bouteilles (2) disposées en paquets, ledit film (7) étant en matériau extensible et ayant une pluralité ordonnée de trous (8), comprenant une station d'enveloppement (27) où ledit film

(7) en matériau extensible est enveloppé autour de ladite pluralité de bouteilles (2) de manière à insérer une portion d'extrémité (4) desdites bouteilles (2) dans l'un respectif desdits trous (8) de sorte que la même portion d'extrémité (4) fasse saillie vers l'extérieur de l'emballage, où elle comprend un plan d'alimentation (10) sur lequel une pluralité de bouteilles (2) est alimentée selon une direction d'alimentation (A) ; un moyen (20) pour alimenter un film (7) en matériau extensible, disposé de manière à effectuer l'alimentation dudit film (7) en matériau extensible le long d'un chemin d'alimentation (B) substantiellement parallèle à ladite direction d'alimentation (A);

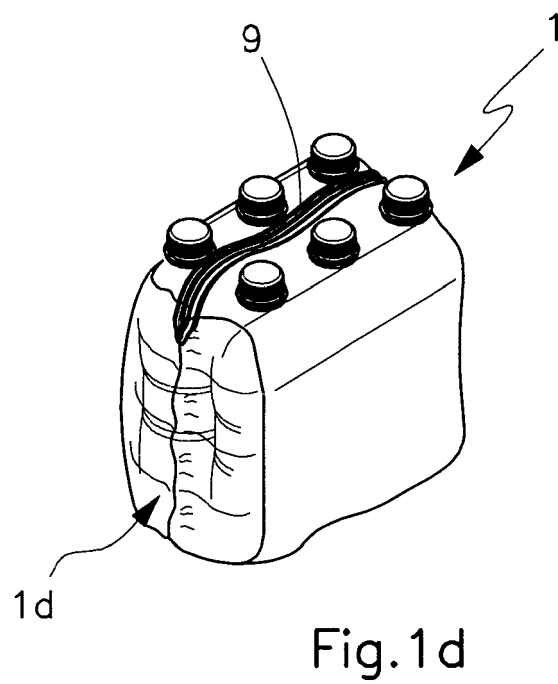
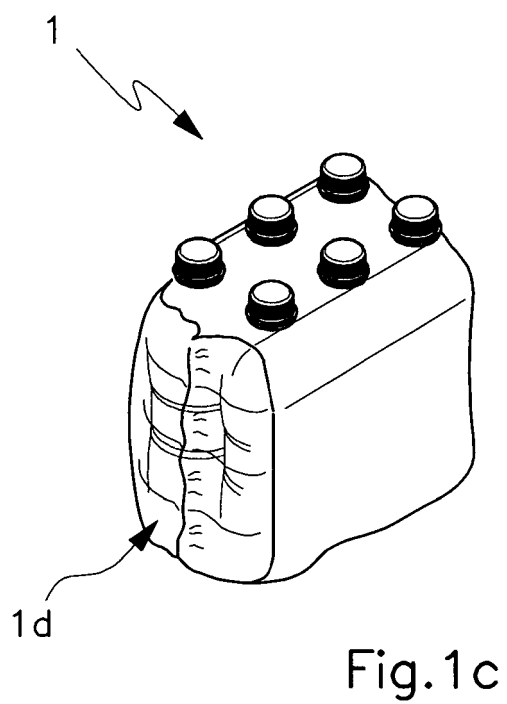
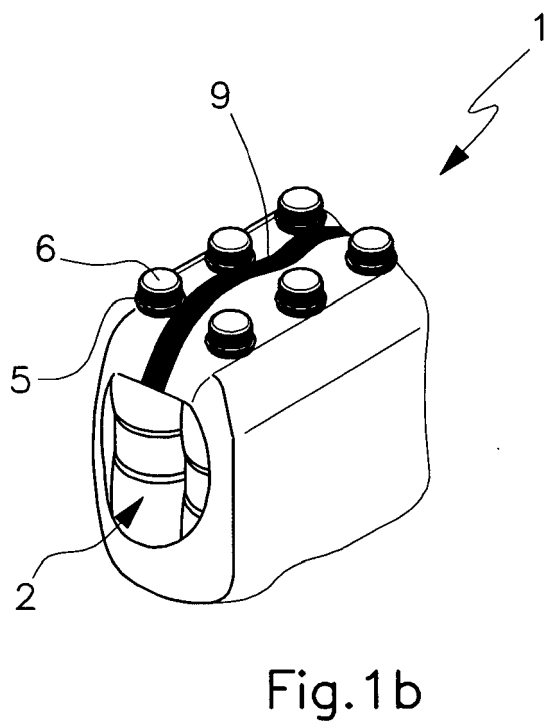
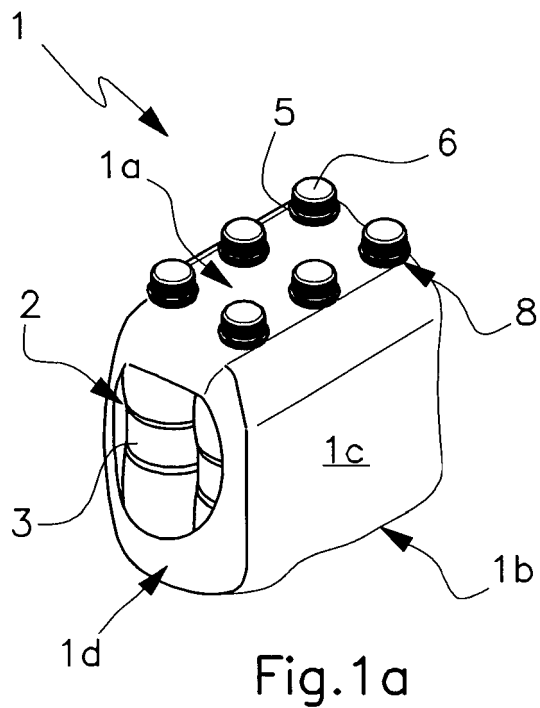
un moyen d'extension (21) disposé en aval dudit moyen d'alimentation (20) le long dudit chemin d'alimentation (B), et apte à effectuer l'extension dudit film (7) en matériau extensible, ledit moyen d'extension (21) comprenant un moyen d'extension longitudinale (21a), apte à effectuer l'extension dudit film (7) dans une direction longitudinale par rapport audit chemin d'alimentation (B), et un moyen d'extension transversale (21b), disposé en aval dudit moyen d'extension longitudinale (21a), et apte à effectuer l'extension dudit film (7) dans une direction transversale par rapport audit chemin d'alimentation (B), ledit moyen d'extension transversale (21b) comprenant deux couples de courroies sans fin contrarotatives (212, 213) disposées sur les bords longitudinaux (70) dudit film (7) et divergent de manière à effectuer une extension de la longueur dudit film (7) pendant l'avancement;

une station d'enveloppement (27) disposée sur ledit plan d'alimentation (10) le long de ladite direction d'alimentation (A) où ledit film (7) en matériau extensible est plié autour de ladite pluralité de bouteilles (2) de manière à former un tube enveloppé autour de ladite pluralité de bouteilles, en disposant chacun desdits trous (8) autour d'une dite portion d'extrémité (4) d'une respective bouteille (2) ; un moyen de fermeture longitudinale (29) disposé à la sortie de ladite station d'enveloppement (27) le long de ladite direction d'alimentation (A), apte à effectuer la fermeture dudit film (7) en matériau extensible;

une station de scellement et de coupe (30) disposée en aval dudit moyen de fermeture longitudinale (29), et apte à réaliser à la fois la fermeture et la coupure dudit film (7) en matériau extensible dans une direction transversale à ladite direction d'alimentation (A).

5. Appareil selon la revendication 4, où il comprend, à l'entrée de ladite station d'enveloppement (27), un moyen d'alimentation longitudinale (40) pour alimenter une bande (41) en matière plastique apte à être appliquée audit film (7) en matériau extensible dans une direction longitudinale par rapport à ladite direction d'alimentation (A).

6. Appareil selon la revendication 4, où il comprend un moyen de perçage (24) disposé en aval dudit moyen d'extension (21) le long dudit chemin d'alimentation (B), et apte à effectuer ladite pluralité ordonnée de trous (8) sur ledit film (7) en matériau extensible. 5
7. Emballage pour emballer des bouteilles, l'emballage étant fabriqué à travers la méthode selon l'une des revendications de 1 à 3, comprenant un film (7) en matière plastique enveloppé autour d'une pluralité de bouteilles (2) disposées en paquets, ledit film (7) étant fabriqué en matériau extensible et ayant une pluralité ordonnée de trous (8) à travers lesquels une portion d'extrémité (4) desdites bouteilles (2) fait saillie vers l'extérieur de l'emballage, où il comprend en outre une bande longitudinale (41) en matière plastique apte à servir d'élément de préhension (9) pour le transport à la main. 10 15 20 25 30 35 40 45 50 55



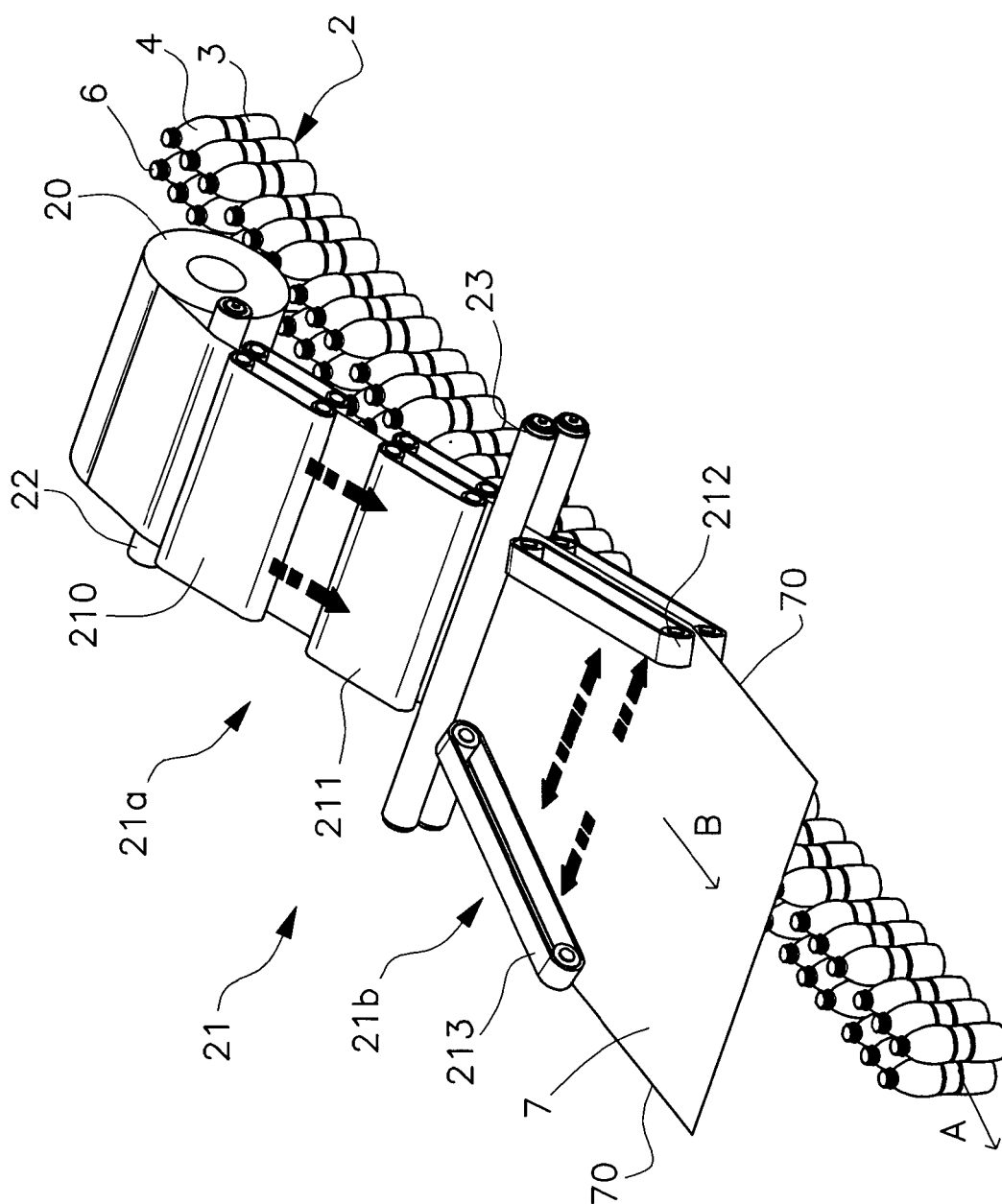


Fig. 2

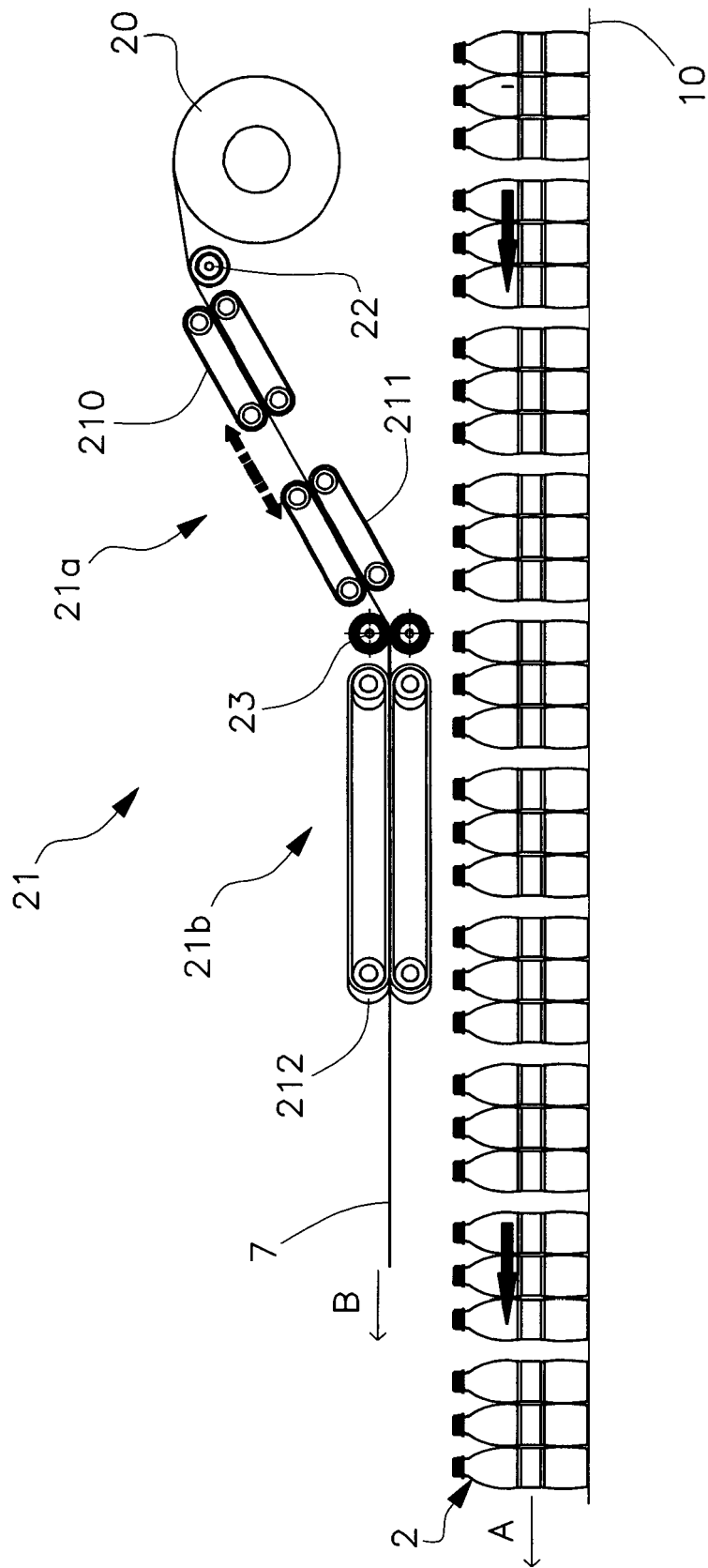


Fig.3

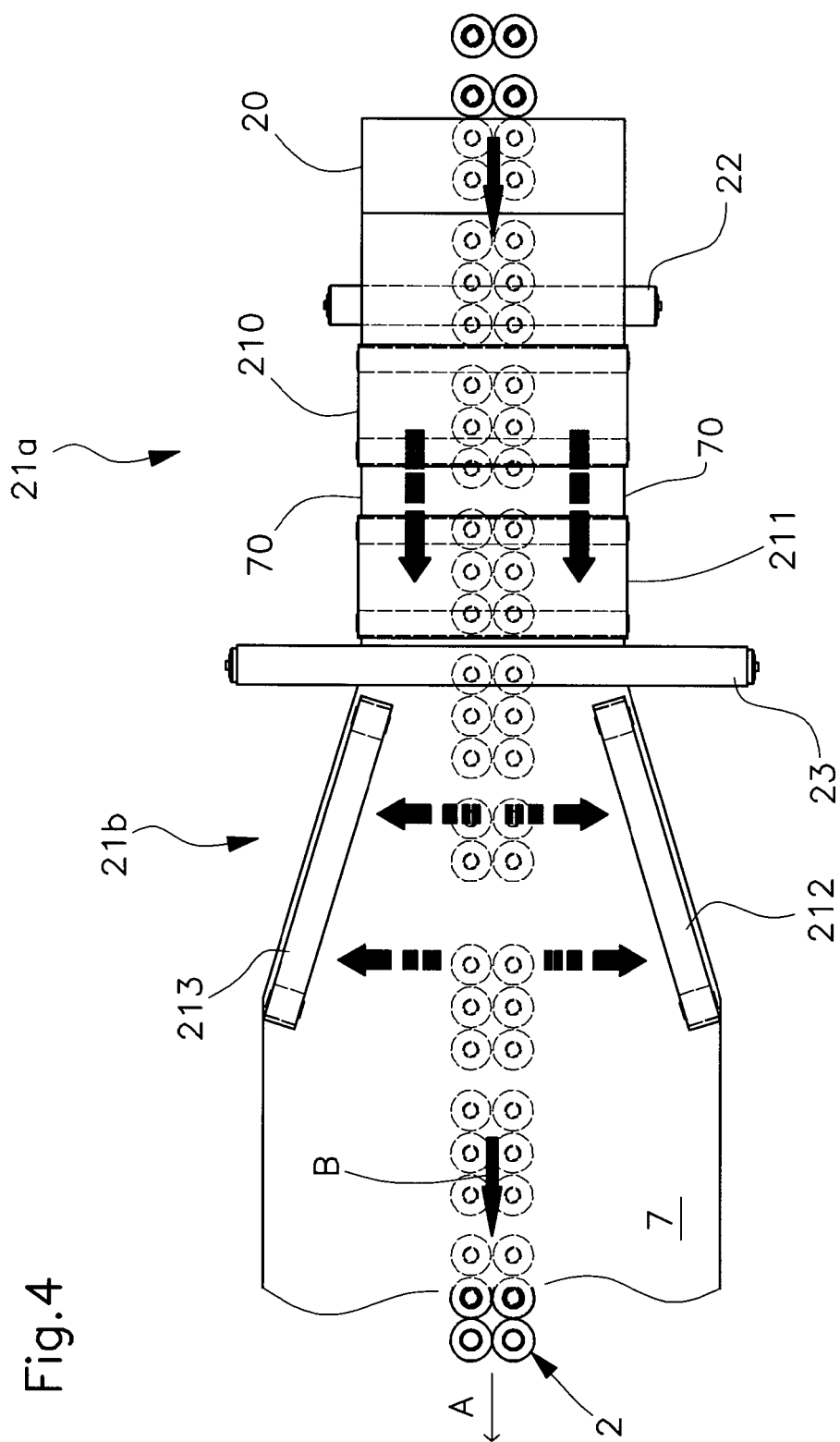
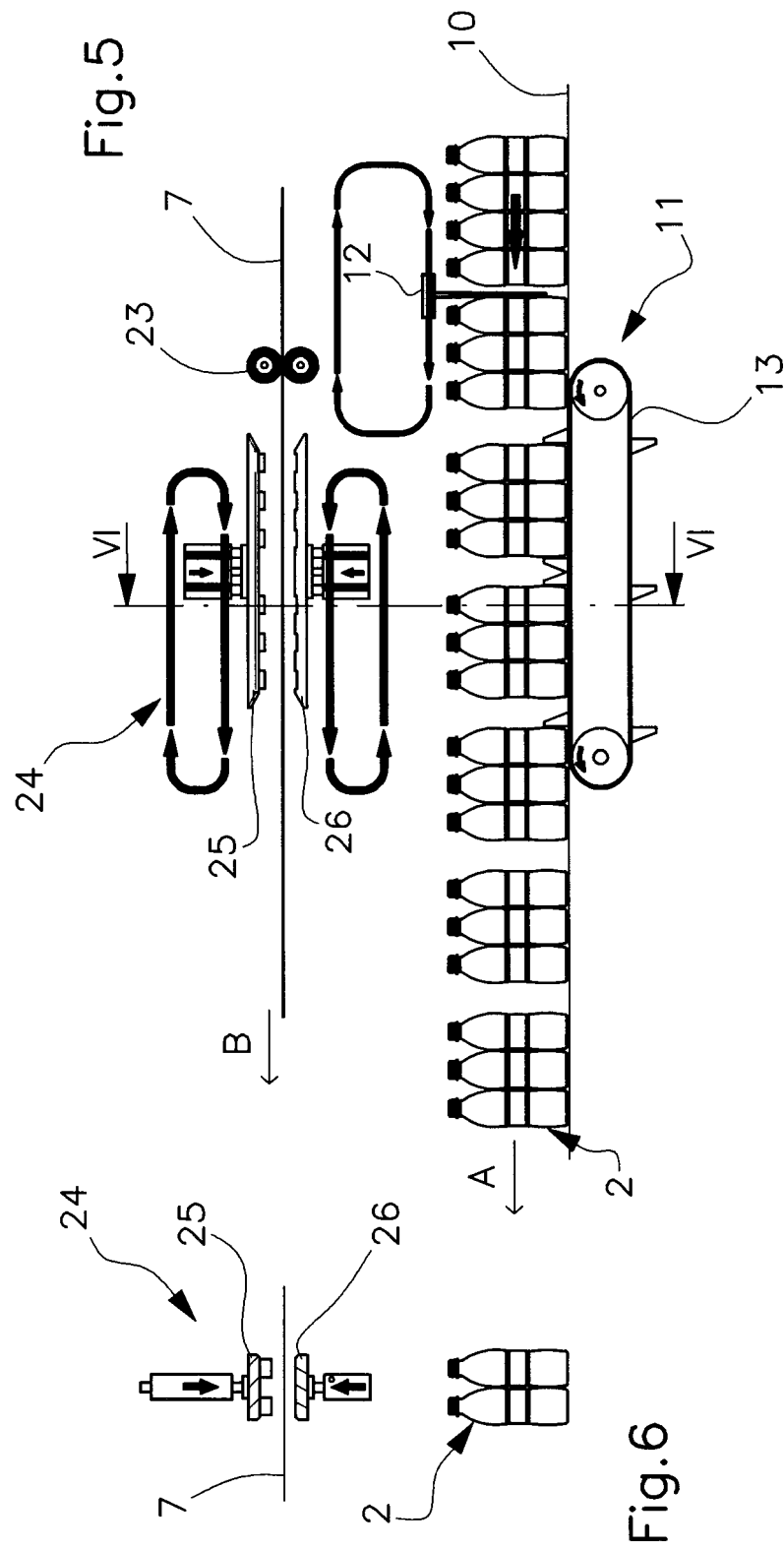


Fig. 4



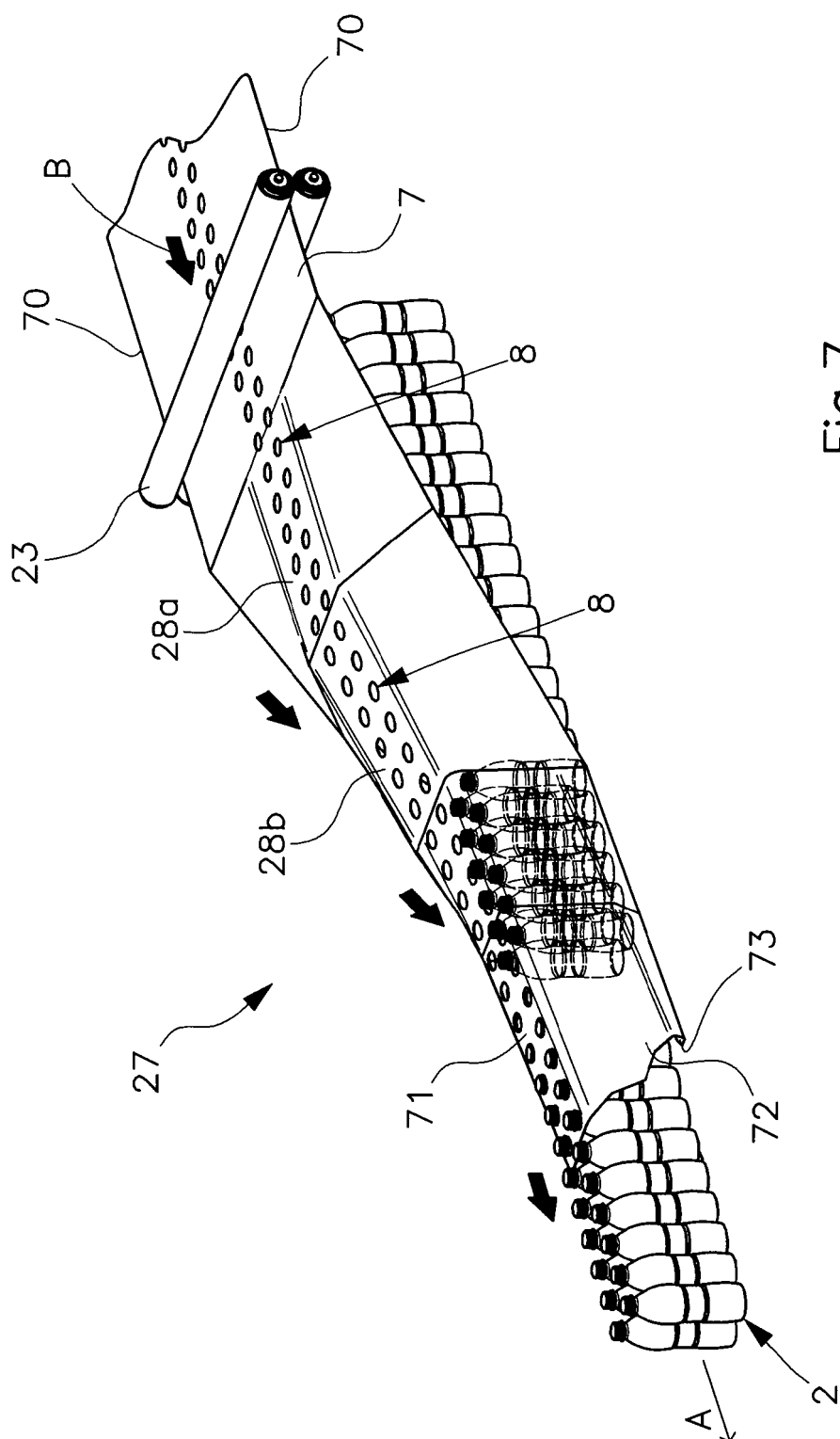
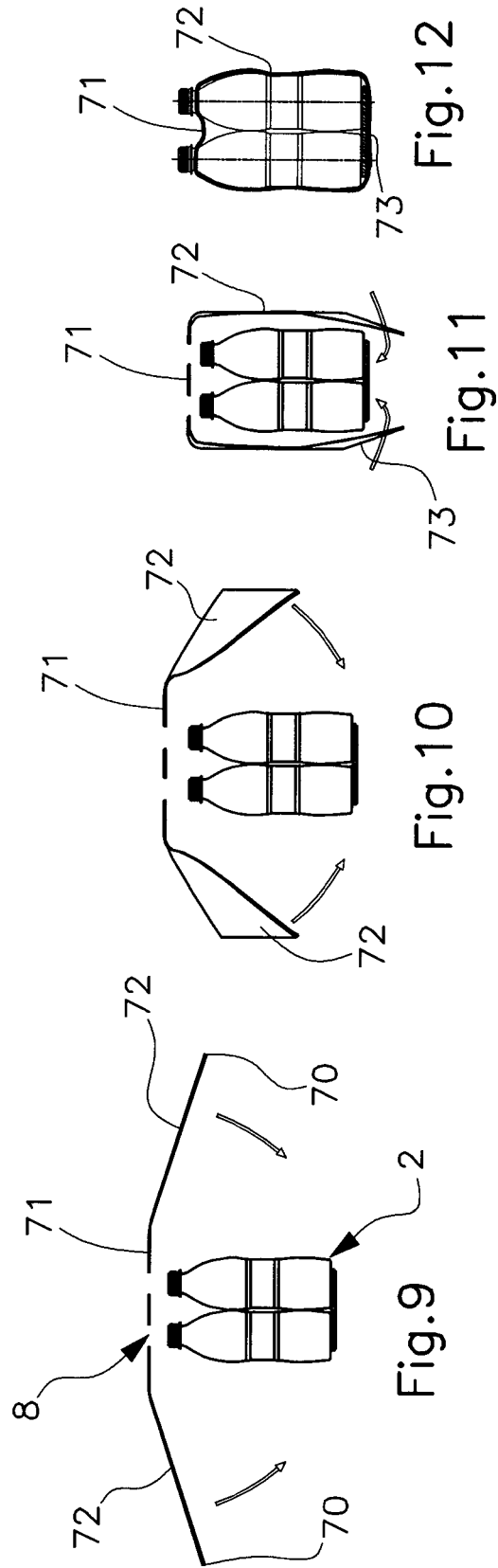
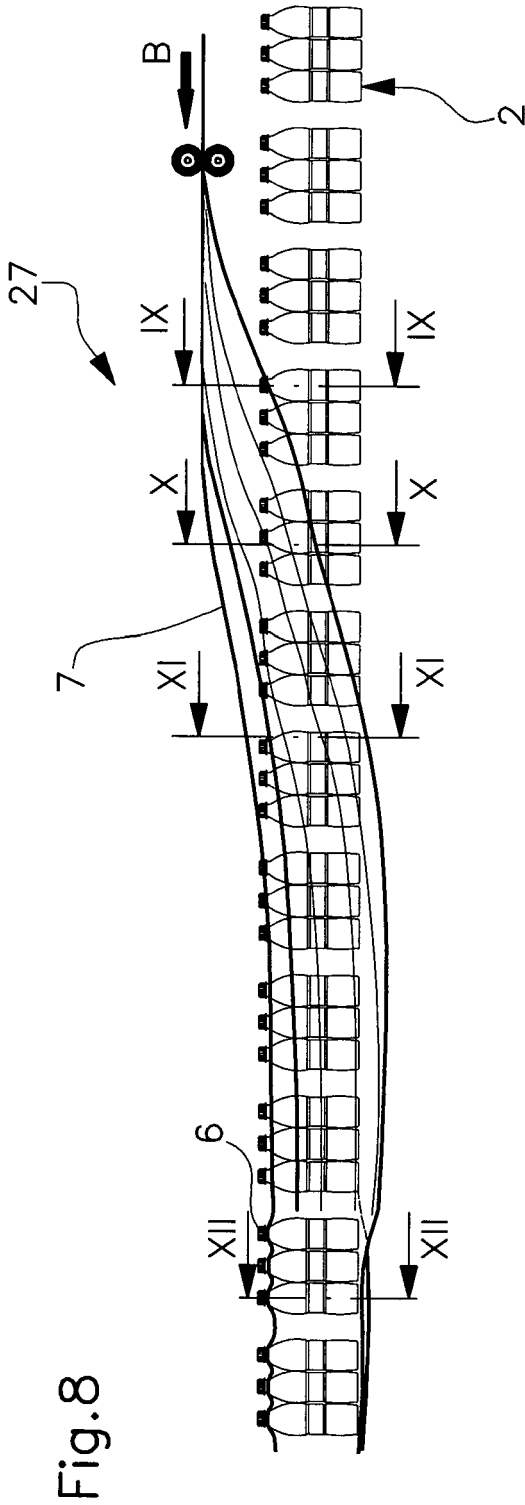
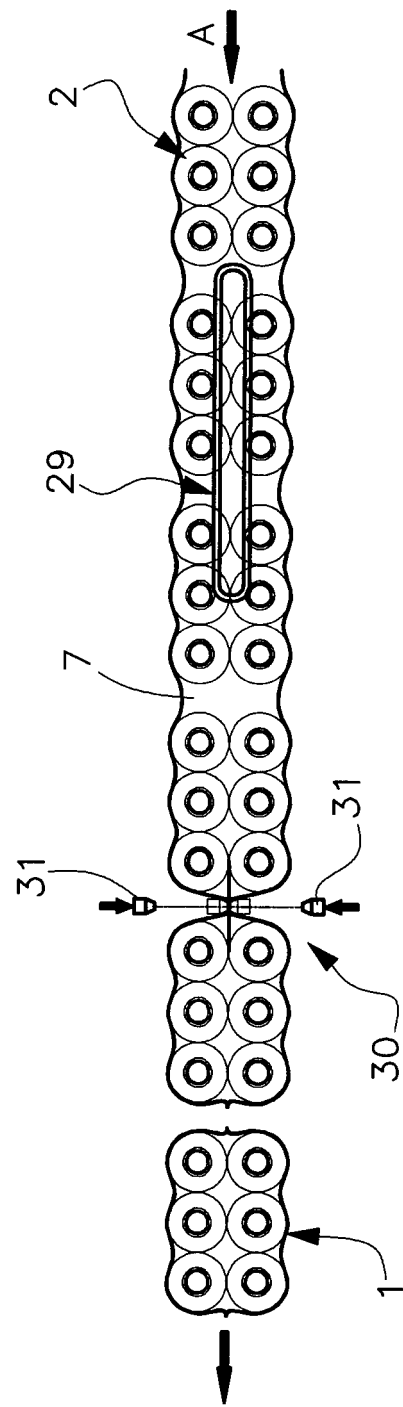
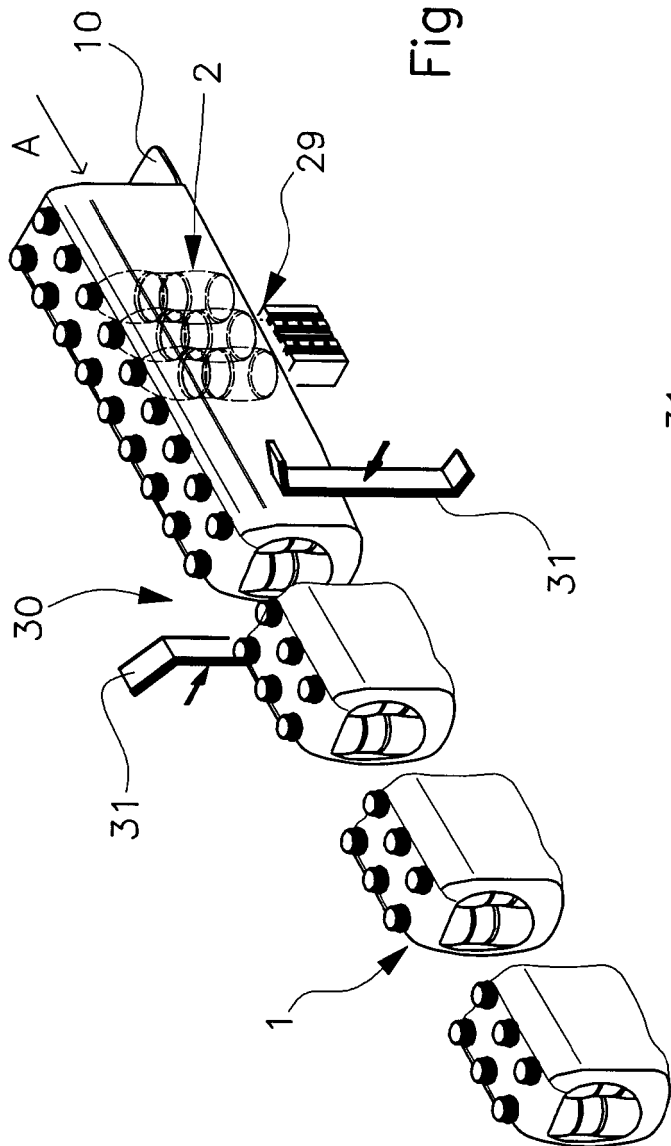


Fig. 7





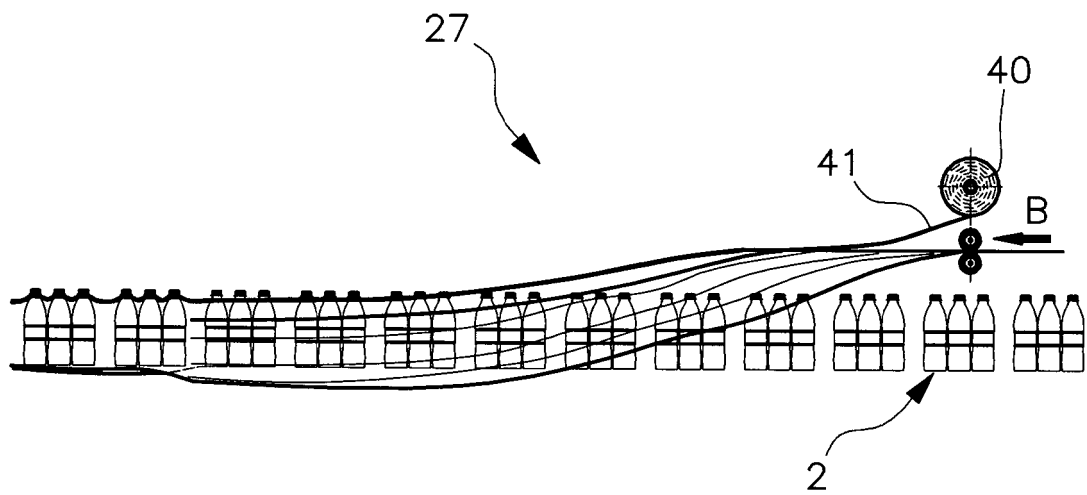


Fig.15

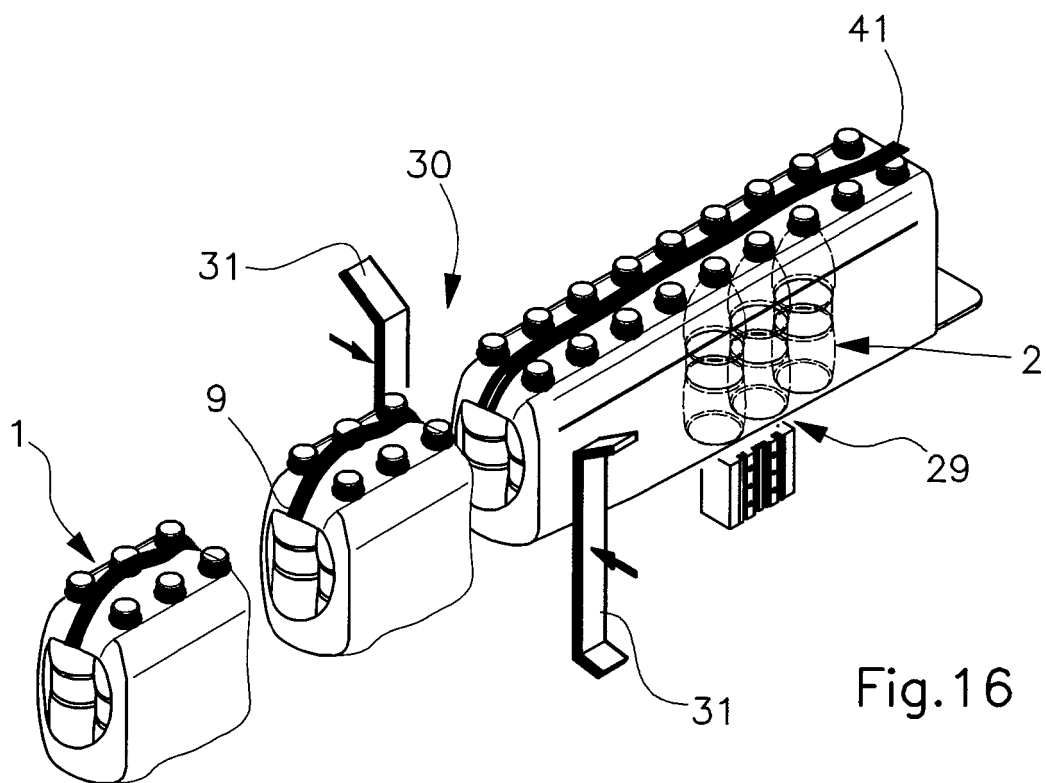


Fig.16

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 3353326 A [0002]
- DE 2819670 A1 [0002]
- DE 102010000381 A1 [0005]