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(54) Packaging under modified atmosphere

(57) A container suitable for receiving at its own interior a gas generating a modified atmosphere for preserving contents, comprising a base part (2) arranged for receiving said contents, and cover means (3), thermo-sealable with said base part (10) and arranged for encapsulating said gas inside said container (1), further comprises spacing means (4; 4a) suitable for holding said cover means (3) spaced from said base part (2) at least during the insertion of said gas into said container.

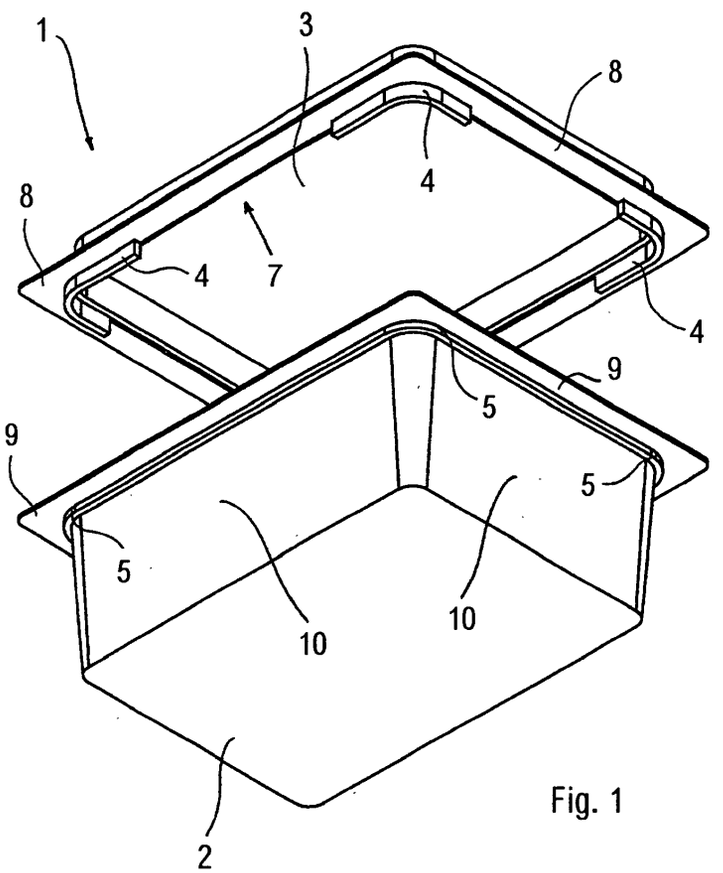

Fig. 1

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Description

[0001] The invention relates to a container sealable by means of thermo-welding in modified atmosphere, particularly to a container provided with a base part and a cover, thermo-sealable thereto at its own border, and containing a gas, for example an inert gas.

[0002] In the thermo-sealing field of containers in modified atmosphere, containers are known arranged for being sealed by means of proper closing films; the adhesion of the film to the base part of the container results according to the modes described in the following: inside a thermo-sealing apparatus, the film is held raised, for example at a distance of some millimetres, with respect to the border of the base part. The base part and the film placed thereon are introduced into a chamber, insulated from the external environment, with which such an apparatus is provided. Inside said chamber the vacuum is achieved in order to enable the air to flowing out through the gap existing between the base part and the film; subsequently, a gas is introduced into the chamber, which gas by penetrating into the container constitutes its modified atmosphere. Eventually, a thermo-sealing device, for example provided with welding bars, firmly fixes the film to the container at the border of the base part.

[0003] In the case the containers must be sealed by means of proper covers, previously made apart, for example by thermo-forming, rather than by means of a film, as previously described, the employment of apparatus of the type as above described, is made very difficult by a plurality of problems that arises.

[0004] In the case a base part of container is introduced into a thermo-sealing chamber with the relative cover lying on said base part, it is observed that, whereas the extracting phase of the air by depressurising provides satisfying results, the conditioning phase of the atmosphere is made impossible by a resulting "suction cup" effect between the base part and the relative cover holding the said cover firmly in contact with the base part, by preventing the gas from entering into the container.

[0005] In addition, since the pressure inside the chamber results greater than inside the container, this later may result subjected to crushing or deformation that make the container unusable.

[0006] In order to remove such disadvantage, constructive modifications are applied to the described apparatus, substantially consisting of handling devices introduced into the thermo-sealing chamber, arranged in order to hold each cover raised with respect to the border of the relative base part by a distance sufficient to facilitate air to flow out and to allow the gas constituting the modified atmosphere to enter. Once the gas entered into the container, the cover is released by the handling device and positioned on the border of the base part. In this manner, the pressure inside the container equals the pressure of the chamber, the cover remains therefore properly positioned and it is possible to proceed to thermo-seal the cover on the base part.

[0007] A disadvantage of the thermo-sealing systems in modified atmosphere of containers with thermo-sealed covers results in 'that purpose-built apparatus is required that, at best, implies relevant structural changes of the thermo-sealing systems normally used for sealing containers by means of plastic films.

[0008] Such changes are particularly onerous since imply that handling devices of the covers are introduced into the existing structure.

[0009] Another disadvantage of such devices consists of that, in the case the containers to be thermo-sealed are advanced by belt-conveyors, or similar, frequent, relative positioning errors occur between the base part and the cover, which errors remarkably reduce the efficiency, by causing waste of time and requiring an operator to intervene in order to restore the proper functioning.

[0010] A purpose of the present invention is to improve the thermo-sealing systems of containers in modified atmosphere.

[0011] A further purpose of the invention is to obtain a system for thermo-sealing in modified atmosphere a cover on a relative base part that does not require complex apparatus to be built, neither conventional apparatus for sealing films on base parts of containers is substantially modified.

[0012] A further purpose of the invention is to provide a system for associating a cover with a respective base part by employing conventional apparatus of thermo-sealing in modified atmosphere.

[0013] A still further purpose is to obtain a thermo-sealing system in modified atmosphere that enables to remarkably reduce waste of time and reject items, by substantially removing relative positioning errors between a base part of container to be sealed and the relative cover.

[0014] According to the invention, a container is provided suitable for receiving at its own interior a gas generating a modified atmosphere for preserving contents, comprising a base part arranged for receiving said contents, and cover means thermo-sealable to said base part and arranged for encapsulating said gas inside said container, characterised in that, it further comprises spacing means suitable for holding said cover means at distance from said base part at least during the insertion of said gas into said container.

[0015] In an advantageous version, said spacing means is provided in the base part and protrudes from the border in a direction opposed to the bottom.

[0016] In a further advantageous version, said spacing means is provided in the cover means and is oriented towards the border of the base part.

[0017] This further advantageous version enables to hold the border of the base part of container substantially free from protrusions that could obstruct the contents from being collected.

[0018] Owing to the invention, it is possible to obtain a container provided with a base part suitable for receiving a cover thermo-sealable thereto in modified atmosphere without the need of using purpose-built handling apparatus of covers.

[0019] Furthermore, it is possible to use the apparatus already known for sealing films on base parts of container.

[0020] In another advantageous version, the container according to the invention comprises recess means arranged for interacting with the spacing means in order to centre said cover means on said base body.

[0021] Such recess means may be provided in the base body, in the case that the spacing means is associated with the cover means.

[0022] Alternatively, the recess means may be made in the cover means, when the spacing means is provided in the base body.

[0023] Therefore, owing to the invention, the possibility is substantially removed that relative positioning errors result between the container and the relative cover during thermo-sealing in modified atmosphere.

[0024] In a still further advantageous version, the container according to the invention comprises seats arranged in order to receive the spacing means.

[0025] Such seats may be obtained in the base body, in the case that the spacing means is provided in the cover means.

[0026] The seats may as well be obtained in the cover means in the case that the base body is provided with the spacing means.

[0027] The invention may be better understood and carried out with reference to the enclosed drawings, that illustrate some exemplifying and not restrictive embodiment forms thereof, wherein:

Figure 1 shows a perspective sketched view of a container according to the invention;
Figure 2 is a front view of the container of Figure 1;
Figure 3 is a side view of the container of Figure 1;
Figure 4 is a sketched and broken side view of a container according to the invention highlighting a variance of the spacing means.

[0028] With reference to Figures 1, 2 and 3 a container 1 is shown comprising a tray 2 arranged for containing objects, for example food, that must be preserved in modified atmosphere, and a cover 3 arranged for sealing the tray 2 after that air has been drawn from the container 2 and a gas has been introduced.

[0029] The cover 3 is provided with spacing elements 4 suitable for coupling themselves with a groove 5 made at a lowering of the border 9 of the tray 2. The spacing elements 4, once engaged with the groove 5, hold the cover 3 raised from the tray 2 at a distance of some millimetres, such distance resulting suitable for enabling air to be extracted from the container 1 and gas to be introduced, that substantially prevents squashing problems of the container 1 during the steps of the conditioning procedure of the atmosphere taking place inside a thermo-sealing chamber of a usual apparatus.

[0030] The spacing elements 4 have shape and size such to occupy only a portion of the perimeter of the groove 5, in such manner such elements identify gaps 7 between the tray 2 and the cover 3 of said container 1 suitable for enabling the passage of the exiting air and the entering gas.

[0031] Since the cover 3, as on the other hand the relative tray 2, is usually made with a material having low density, the danger is substantially prevented that the cover 3 hermetically closes the distributing section, under the push of its own weight, preventing the gas from entering.

[0032] The spacing elements 4, by positioning themselves into the groove 5, act as well like centring means in order to prevent potential relative positioning problems between the tray 2 and the cover 3.

[0033] When the air has been removed from the container 1 and the gas has been inserted, a thermo-sealing device, present at the interior of the above mentioned chamber, acts on the cover 3, by pressing the cover 3 downwards up to bring a peripheral region defining a flange 8 of the cover 3 in contact with the border 9 of the tray 2. In this manner, the spacing elements 4 lying resting on the groove 5 are induced to penetrate into the tray 2. Such operation results possible since the tray 2, usually made of plastic matter, shows a slight deformability of the side walls 10 that allows the spacing elements 4 to be housed at their own interior without causing damages of the structure of the container 1 and in particular without causing tears or holes in the walls 10, with consequent entry of air and outflow of gas, that would produce the conditions of modified atmosphere to be violated.

[0034] After the spacing elements 4 have been introduced into the tray 2, the thermo-sealing device provides for permanently joining the flange 8 with the border 9.

[0035] With reference to Figure 4, a variation of the device 1 according to the invention is shown, in which the cover 3 is provided with spacing elements 4a provided with a profiled appendage 11.

[0036] During the conditioning step of the atmosphere at the interior of the container 1, the spacing elements 4a behave in similar manner as previously described, with reference to Figures 1 to 3, the above mentioned appendage 11 interacting with the groove 5 of the tray 2 in order to hold the cover 3 raised with respect to the tray 2.

[0037] The tray 2 is further provided with seats 12, arranged in undercut in order to receive by form coupling the above mentioned appendages 11; during the closing step, the appendages 11 penetrate into the tray 2 by slightly forcing to open the seats 12 in order to be received therein by snapping. Since the groove 12 is provided with a profile showing a slight undercut, the inter-

ference between the appendage 11 and the walls of the seat 5 prevents that, during the conditioning step of the atmosphere, the spacing means 4a enters into the tray 10 by preventing the gas passage.

Claims

1. Container suitable for receiving at its interior a gas generating a modified atmosphere for preserving contents, comprising a base part (2) arranged for receiving said contents, and cover means (3), thermo-sealable with said base part (10) and arranged for encapsulating said gas inside said container (1), **characterised in that** it further comprises spacing means (4; 4a) suitable for holding said cover means (3) spaced from said base part (2) at least during the insertion of said gas into said container.

2. Container according to claim 1, wherein said spacing means (4; 4a) is associated with said cover means (3).

3. Container according to claim 2, wherein said spacing means (4; 4a) is associated with a peripheral region (8) of said cover means (3).

4. Container according to any one of claims 1 to 3, wherein said spacing means is associated with said base body (2).

5. Container according to claim 4, wherein said spacing means extends along a border (9) of said base part (1).

6. Container according to claim 3, or 5, wherein said spacing means (4; 4a) occupies only a portion of the perimeter of said peripheral region (8), or respectively of said border (9), by identifying between said border (9) and said cover means (3) gaps means (7) suitable for allowing the passage of said gas.

7. Container according to any one of the preceding claims and further comprising recess means (5) arranged for interacting with said spacing means (4; 4a) in order to centre said cover means (3) on said base part (2).

8. Container according to claim 7, as appended to claim 2, or 3, or 6 as appended to claim 3, wherein said recess means (5) is obtained in said base body (2).

9. Container according to claim 7, as appended to claim 4 as appended to claim 1, or 5, or 6 as appended to claim 5, wherein said recess means (5) is obtained in said cover means (3).

10. Container according to any one of the preceding claims and further comprising deformable side wall means (10) suitable for deforming in order to receive said spacing means (4; 4a).

11. Container according to claim 10, as appended to claim 2, or 3, or 6 as appended to claim 3, or 8, wherein said deformable wall means (10) is obtained in said base body (2).

12. Container according to claim 10, as appended to claim 4 as appended to claim 1, or 5, or 6 as appended to claim 5, or 9, wherein said deformable wall means (10) is obtained in said cover means (3).

13. Container according to any one of claims 10 to 12, wherein said spacing means (4a, 11) may be received into seats (12) of said deformable wall means (10).

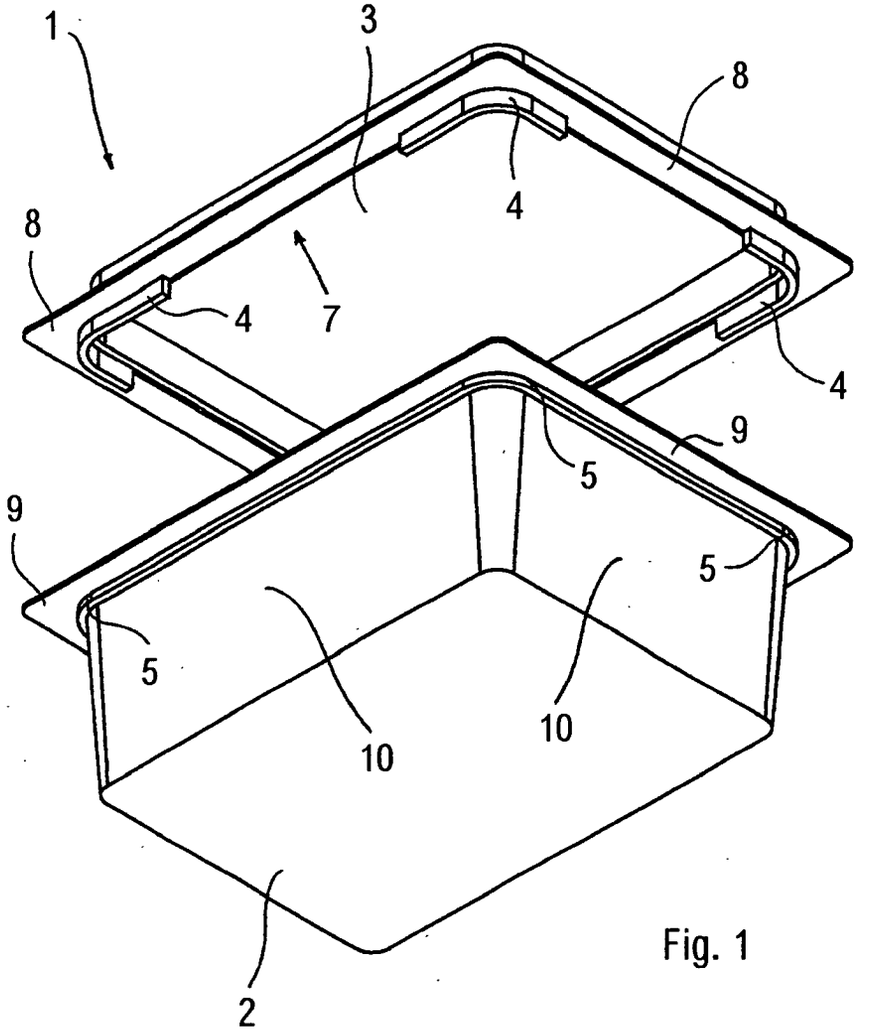

Fig. 1

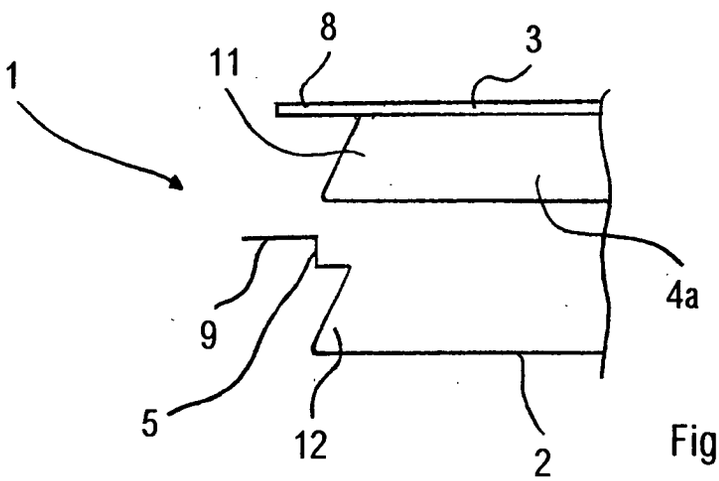

Fig. 4

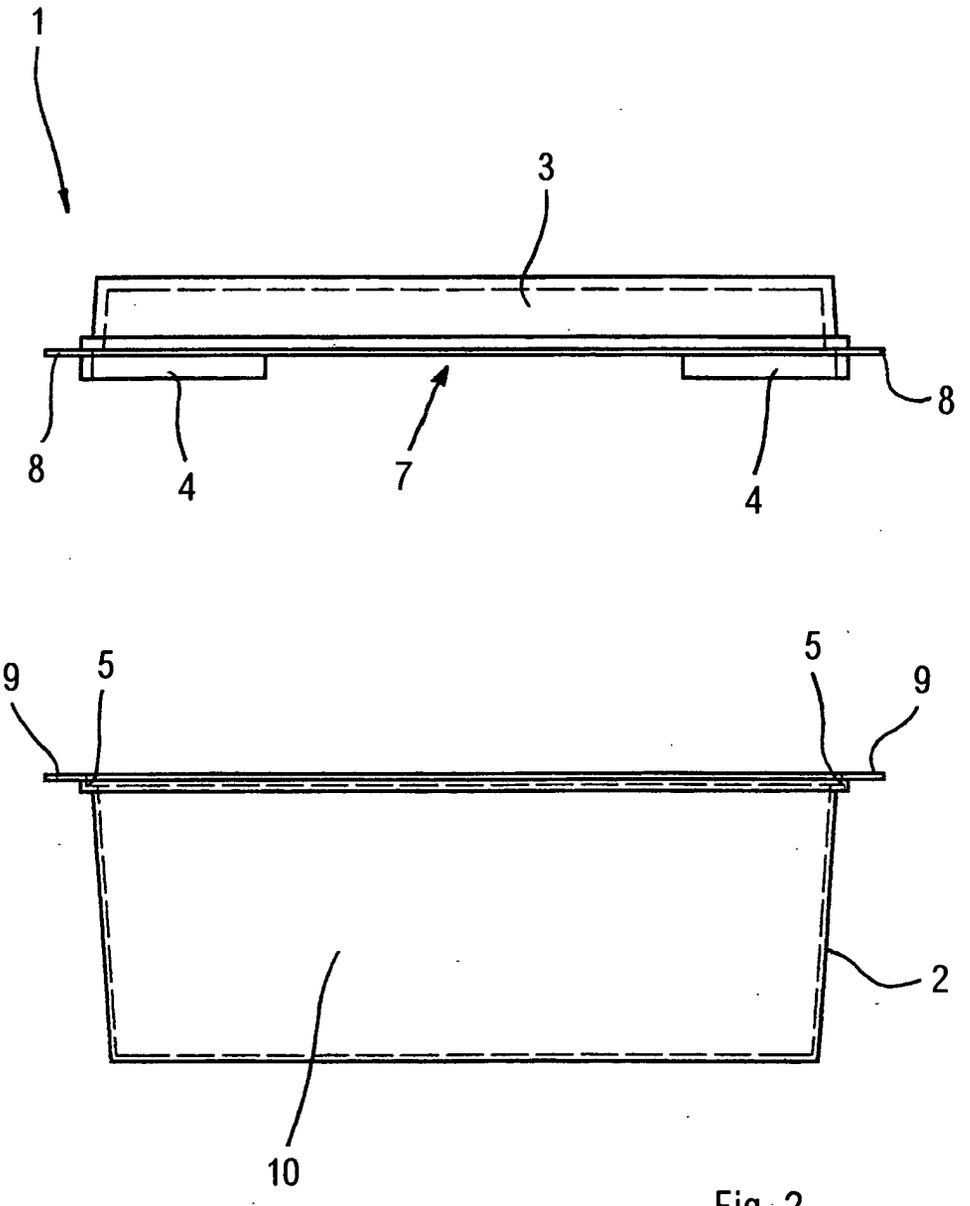

Fig. 2

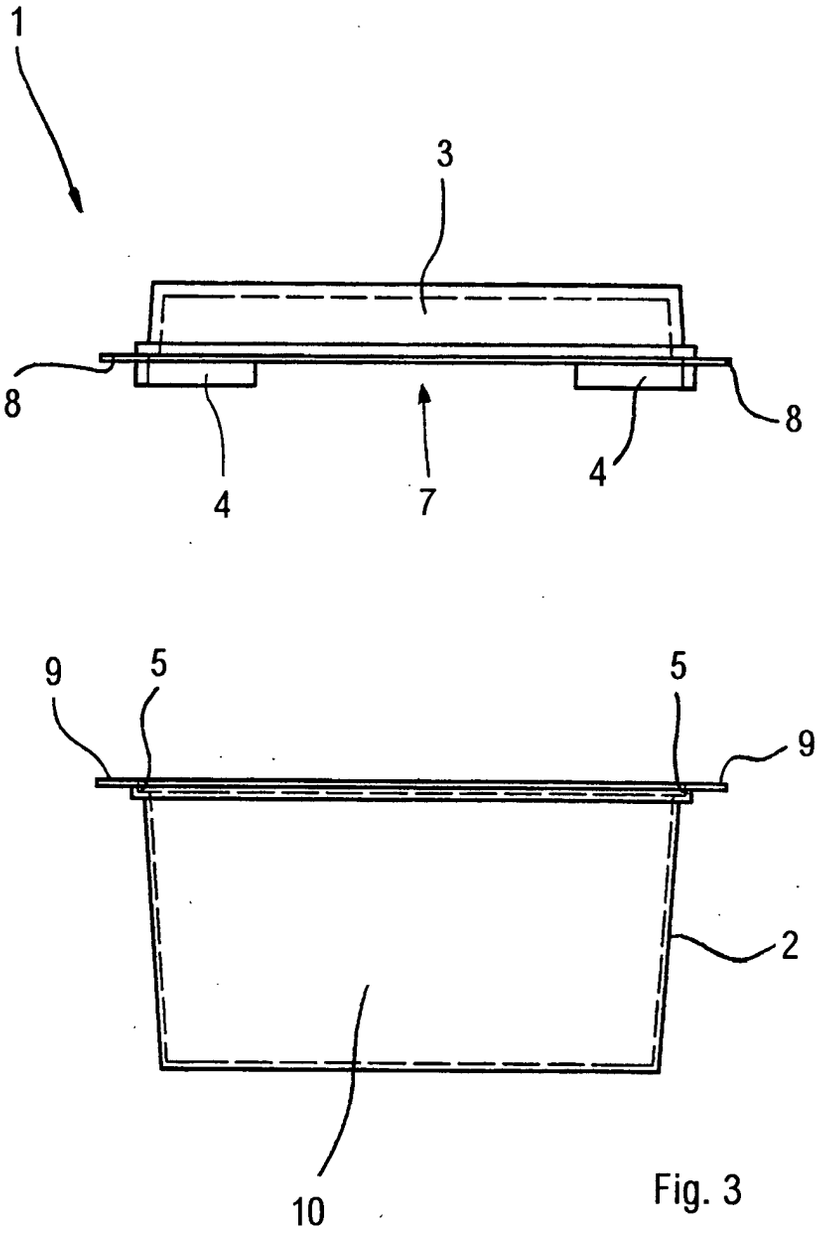

Fig. 3