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(57) **ABSTRACT**

The inventive airtight closure device (2) for a container (1) containing a product to be packed is characterised in that it comprises a base (3) whose circumference is adjustable to the internal wall of the container (1) in such a way that it is possible to bring the internal face (4) of the base (3) into contact with the product by displacing the base (3) which provided with at least one air discharging hole closable after the base (3) is mounted. A container provided with the inventive device is also disclosed. Said invention is particularly suitable for packing food products, in particular in a liquid, pasty and powder form.

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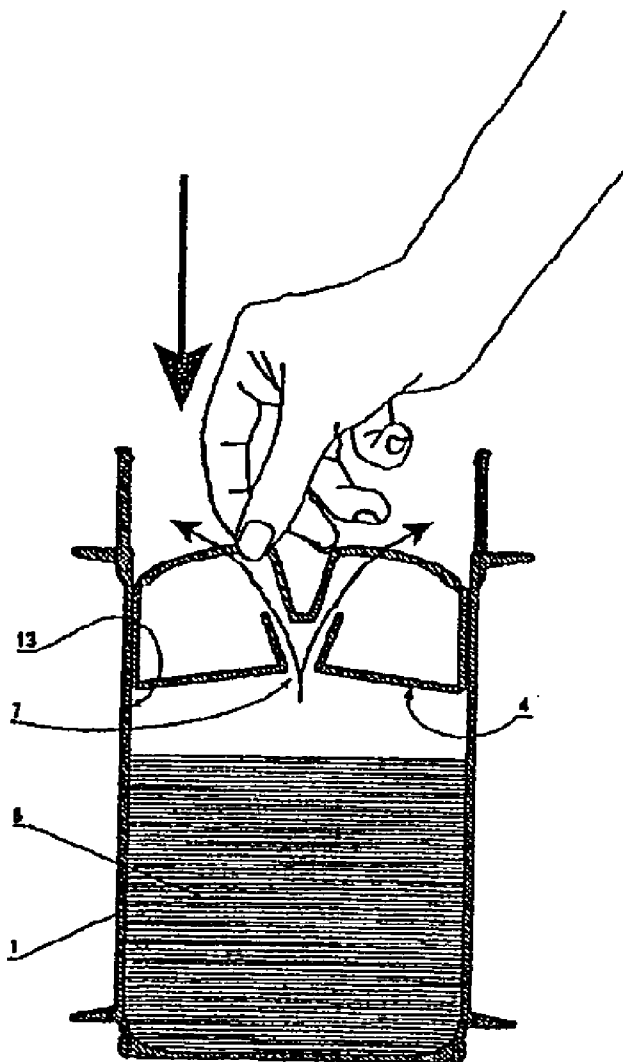


Fig. 2

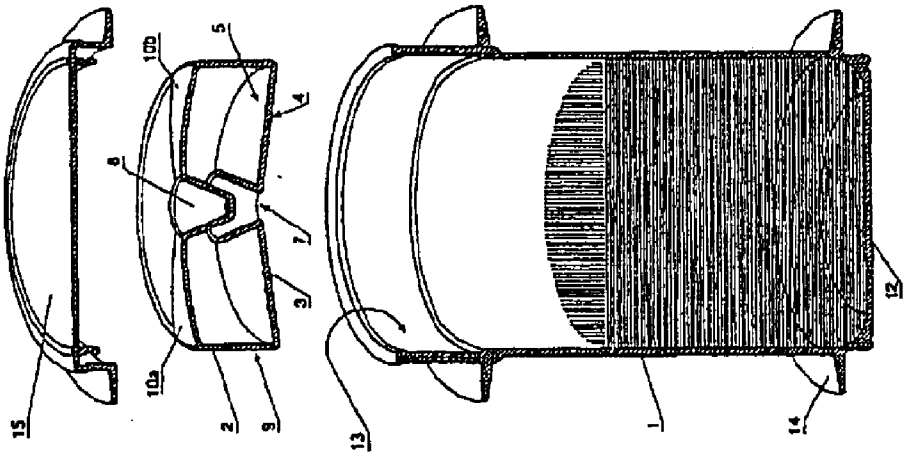


Fig. 1

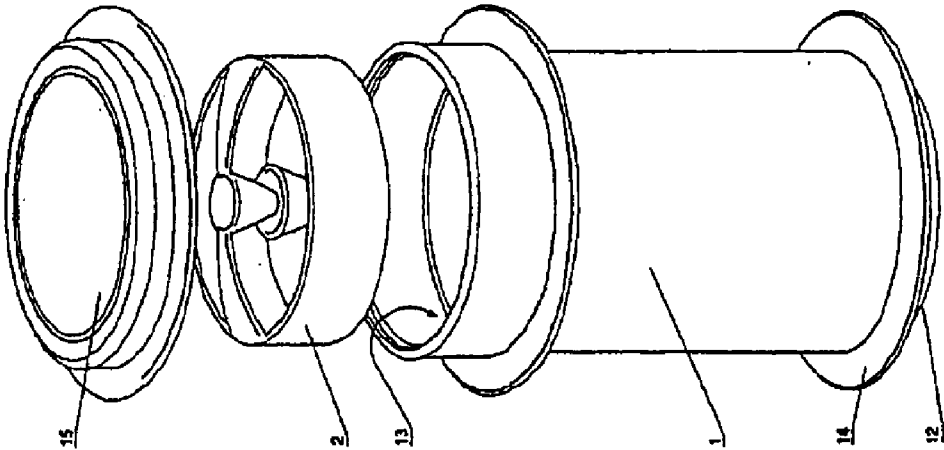


Fig. 4

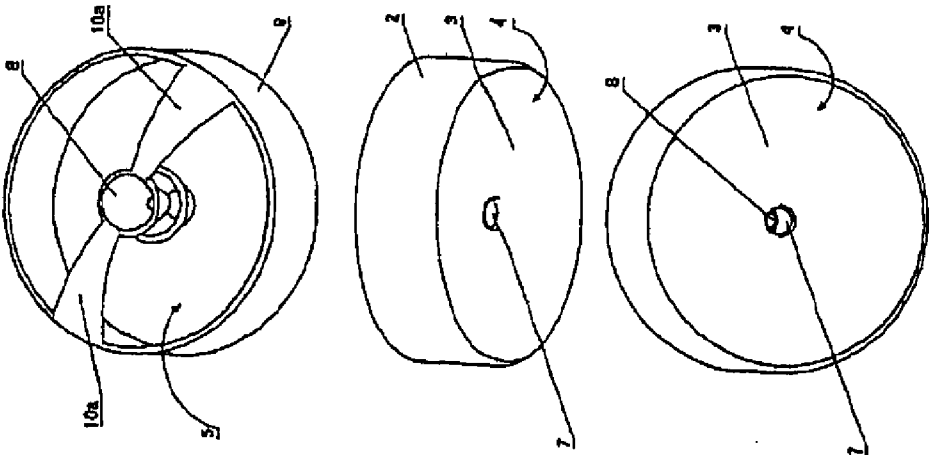


Fig. 3

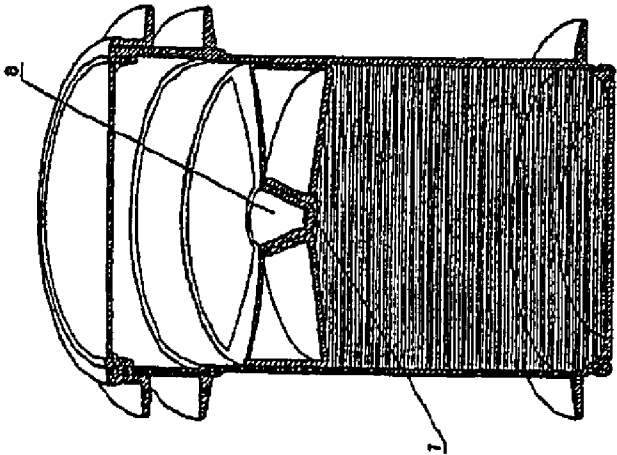


Fig. 6

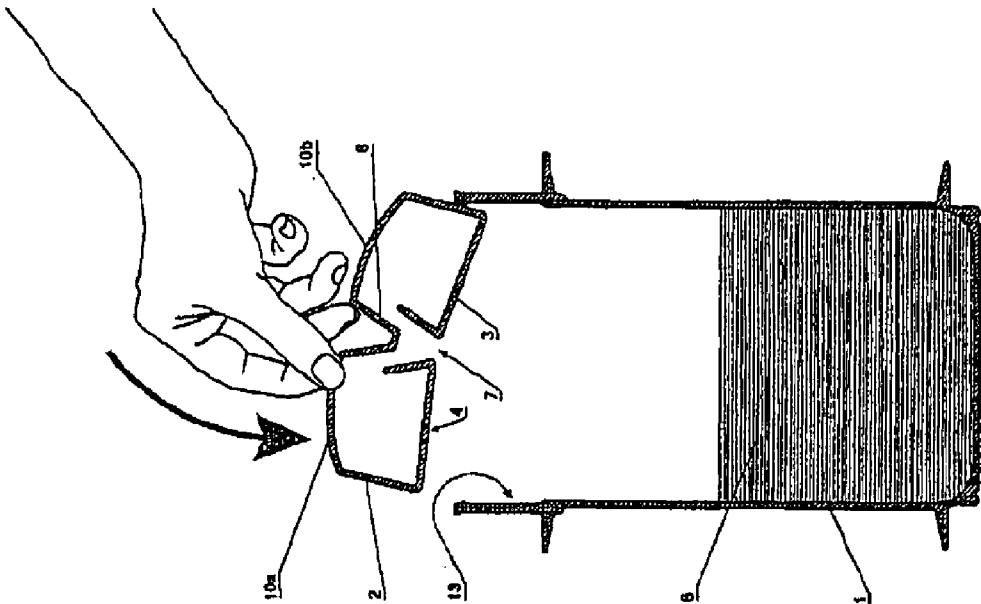


Fig. 5

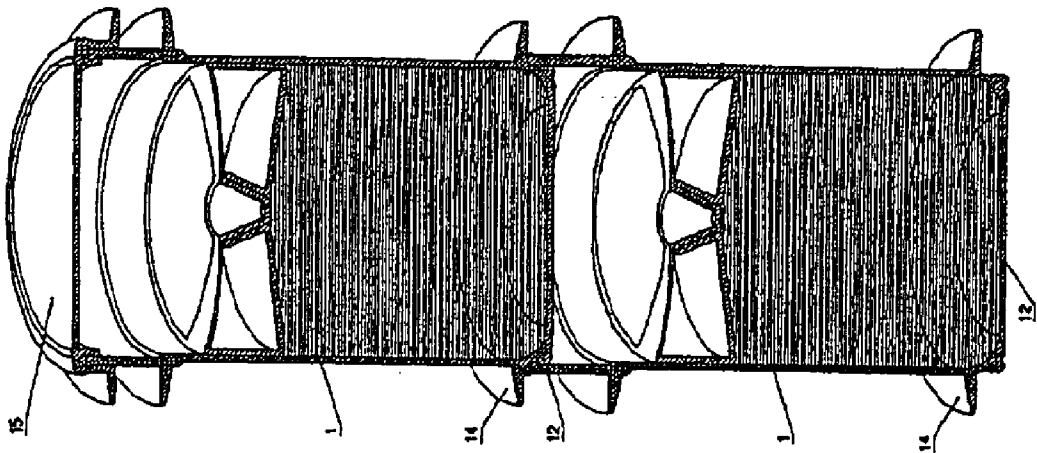


Fig. 8

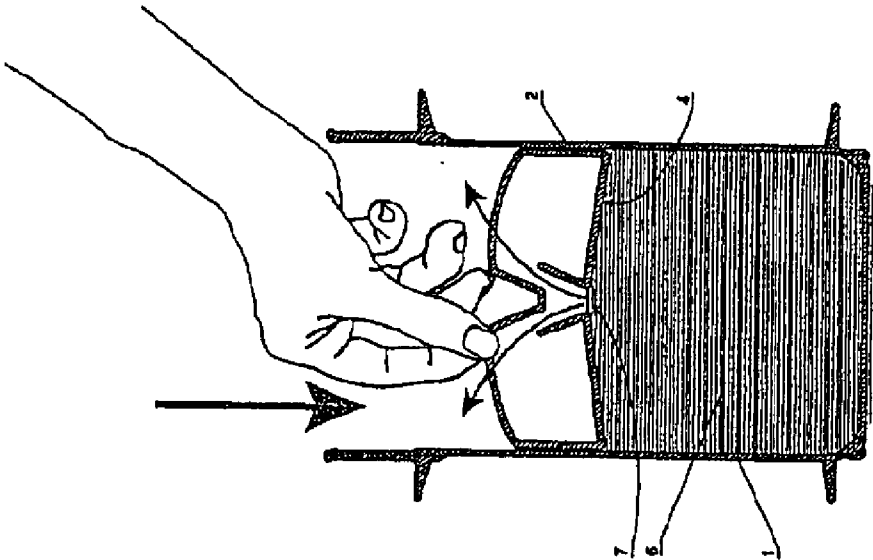


Fig. 7

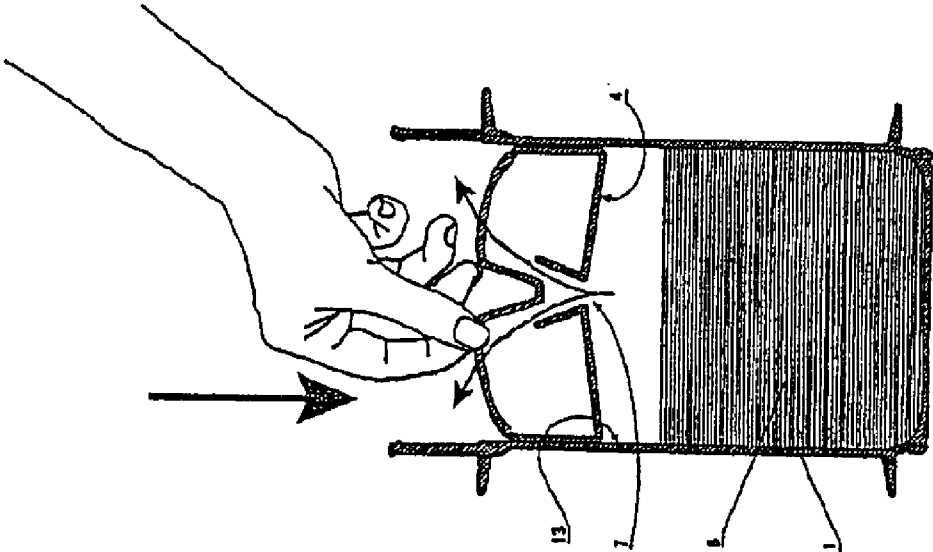


Fig. 9

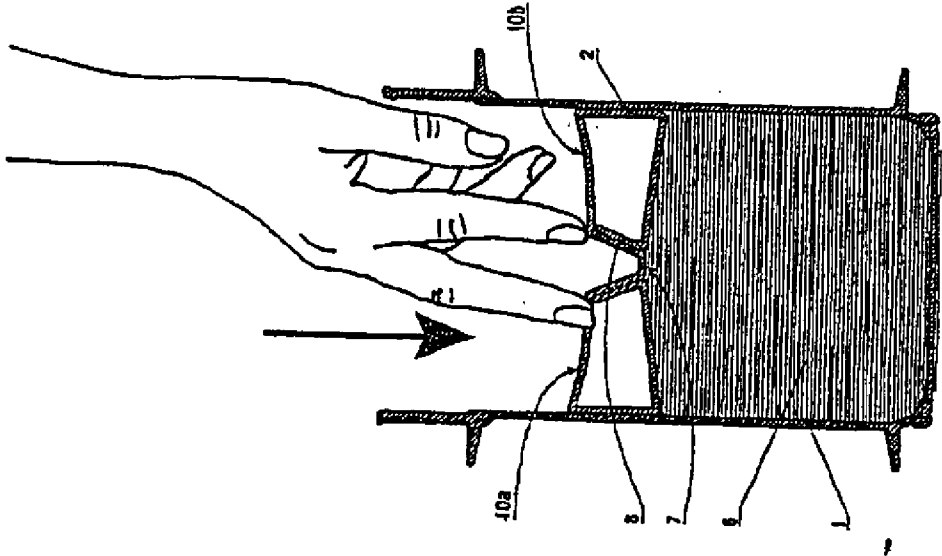
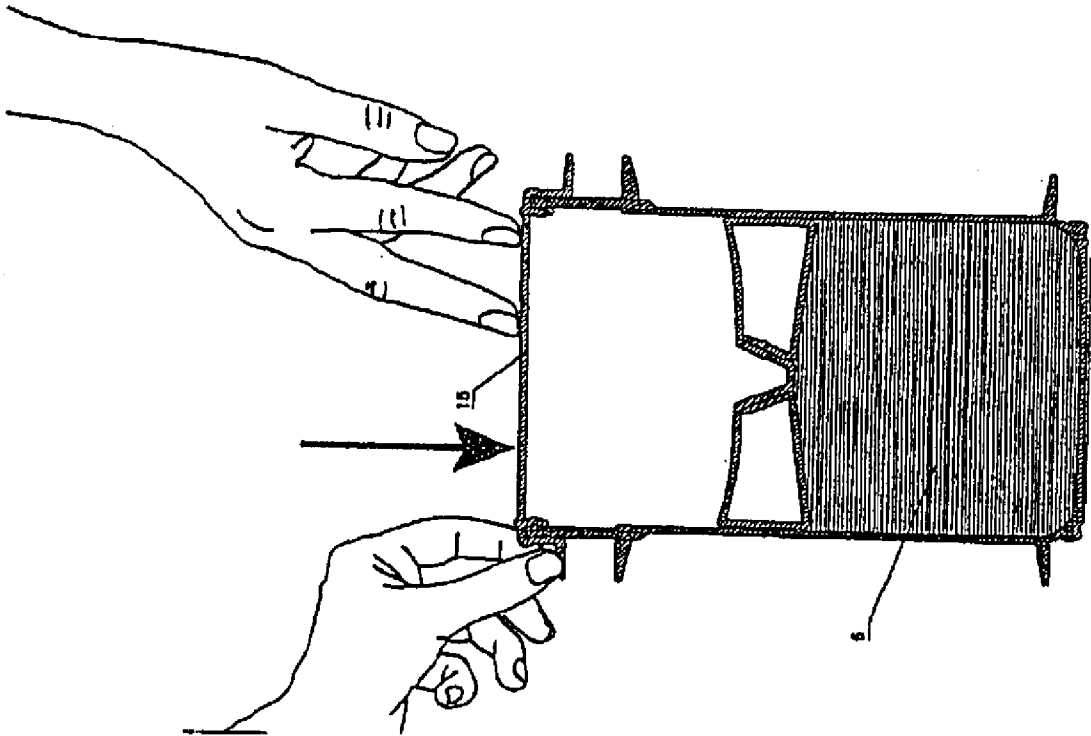


Fig. 10



SEALING CLOSURE DEVICE FOR A CONTAINER

[0001] The present invention concerns an airtight closing device designed to coact with a container of a product to be packed.

[0002] The invention also relates to a container equipped with such a device.

[0003] The invention finds its application in particular in the preservation of foodstuffs sensitive on contact with air and in particular liquid, paste, or powder products.

[0004] In particular, the invention allows the packing of jams or marmalade by avoiding oxidation and microbial contamination of the foodstuffs.

[0005] In the field of jams, it is usual for private individuals to use a layer of paraffin to cover the upper surface of the foodstuff to be preserved.

[0006] The layer of paraffin has the advantage of avoiding any air remaining above the surface of the jam.

[0007] On the other hand, the use of this type of closing system is particularly tiresome and the surface of the container cannot be recovered so effectively once it has been opened.

[0008] In industrial terms, jam jars are generally provided with a screw-on lid pot.

[0009] For instance, the jar is made of glass whereas the metal lid is screwed on.

[0010] The advantage of this type of lid is its simplicity of use and its capacity to be reclosed whenever necessary.

[0011] The disadvantage is that there remains a layer of air between the inner surface of the lid and the upper surface of the product in the pot.

[0012] This means that the life of the product is shortened and this type of container generally requires the addition of powerful preserving agents.

[0013] Therefore there is a need to propose an airtight closing device able to overcome the disadvantages of the current systems and in particular those previously mentioned.

[0014] The present invention meets this requirement in the form of an airtight closing device which is practical to install while allowing it to be adjusted inside the container so as to come close to and preferably into contact with the upper surface of the product to be preserved.

[0015] This closing enables the invention to be easily removed and as required and placed in contact with the surface of the product to be preserved, even if the quantity of the foodstuffs alters in the meantime.

[0016] In a preferred embodiment, the airtight closing device consists of a single part that can be used with only one hand in a very practical manner, both for opening and closing.

[0017] Other aims and advantages will appear in the description which follows which presents a preferred embodiment of the invention which is however not limitative.

[0018] The present invention relates to an airtight closing device intended to coact with a container of a product to be packed, characterized in that it has a base the circumference of which is adjustable to fit the inner wall of the container and allow the internal face to be brought into contact with the base and the product by displacing the base which has at least one hole for evacuating the enclosed air after installation of the base.

[0019] This closing device can take the form of the non-exhaustive alternatives described below:

[0020] the base is made of a semi-rigid material elastically deformable at the time of installation.

[0021] the circumference of the base is prolonged by an edge directed towards the external face of the base.

[0022] the edge has the same adjustment as the circumference relative at the inner wall of the container.

[0023] the internal face of the base has a truncated form with a summit directed towards the outside of the device.

[0024] it includes a central hole through the base and a stopper to plug it.

[0025] the central hole and the stopper have complementary truncated shapes with a summit directed towards the internal face of the base,

[0026] the stopper is assembled on the base suspended above the hole by at least one deformable elastic slat between a stopper inactive position and stopper plugging position.

[0027] it has at least two slats distributed around the hole.

[0028] the slats are joined by the peripheral end of the edge.

[0029] the slats are configured so as to be in flexure with an arrow directed towards the outside of the base when the stopper is in an active position and with an arrow directed towards the base when the stopper is in an active plugged position.

[0030] the circumference is made of elastomer.

[0031] the circumference is made of tetrafluoroethylene.

[0032] The invention also relates to a container with airtight closing comprising a container for a product to be packed and a closing device according to the invention.

[0033] This container can be presented according to the preferred embodiments introduced below:

[0034] the circumference of the base fits tightly but allows installation by hand relative to the inner wall of the container.

[0035] the inner wall of the container and the circumference are circular.

[0036] it includes a lid capping the upper edge of the container.

[0037] the bottom of the container is configured to be able to coact with the upper edge of a superposed similar container.

[0038] The drawings attached are given as examples and are not limitative. They represent only one embodiment of the invention and will make it possible to easily understand it.

[0039] FIG. 1 is an exploded view of the components of the container in a preferred embodiment.

[0040] FIG. 2 is an exploded view of a longitudinal section of the container in FIG. 1.

[0041] FIG. 3 is a sectional view of the invention container in the closed position.

[0042] FIG. 4 shows three perspective views of the closing device.

[0043] FIG. 5 shows a possibility of stacking several containers.

[0044] FIG. 6 shows a first stage of closing device installation in a container.

[0045] FIGS. 7, 8 and 9 show successively three stages of closing device installation.

[0046] FIG. 10 shows a possibility of adding a lid on the container after installation of the closing device.

[0047] The container of the invention includes an appreciably cylindrical container 1, for example of circular form in

section with a bottom 12 and an upper opening allowing the introduction of the product to be packed.

[0048] An inner wall 13 acting with bottom 12 defines a storage volume.

[0049] Container 1 can be executed in a plastic material such as polypropylene or glass or metal.

[0050] As shown on FIG. 1, a closing device 2 can be added via the upper opening in container 1.

[0051] Device 2 is presented in more detail on FIG. 2.

[0052] Indeed, this shows the formation of a base 3 constituting the lower part of device 2 capable of closing the storage volume of container 1.

[0053] As shown, the circumference of base 3 has a shape (circular, polygonal or other), and dimensions that can be adjusted to those of inner wall 13.

[0054] In particular, a very slightly tight fit between device 2 and inner wall 13 will enable installation by hand while subsequently preventing relative displacement between the two parts.

[0055] A very slightly sliding fit can also be used.

[0056] Thus, fittings of the standard type ISO H7g6 or H7h6 can be used.

[0057] The circumference of base 3 is prolonged advantageously upwards (in reference to the orientation of FIG. 2) by an edge 2 advantageously configured to have the same adjustment relative to inner wall 13 of container 1.

[0058] A hole 7 is retained in the centre of base 3 for the evacuation of the air during the installation of device 2 in container 1.

[0059] A stopper 8 of a kind to allow the plugging of hole 7 is installed opposite hole 7.

[0060] In the preferred embodiment shown, stopper 8 is fitted suspended on a pair of slats 10a, 10b elastically mobile between a retracted position of stopper 8 and an active position of same stopper 8.

[0061] For this purpose, slats 10a, 10b create an assembly which is elastically deformable in flexure with a deformed position with an arrow oriented upwards when the stopper is in an inactive position (cf FIG. 2, FIG. 4, FIGS. 6, 7 and 8).

[0062] On the contrary, when stopper 8 is in the plugged position, slats 10a, 10b are deformed in flexure with an arrow directed towards base 3 of device 2.

[0063] This position is shown on FIG. 3 or on FIGS. 9 and 10.

[0064] It can be understood that stopper 8 and slats 10a, 10b have two static positions (active and inactive) around a point for modifying the balance, the modification being produced by the user such as will be clarified below.

[0065] It will be noted that the distal ends (peripheral) of slats 10a, 10b are joined to the upper part of edge 2.

[0066] Of course, the configuration illustrated is not exhaustive.

[0067] In particular a device 2 with a series of holes and series of plugging means can be envisaged.

[0068] In the case illustrated, base 3 of device 2 has an appreciably truncated form with a summit directed towards the outside of container 1.

[0069] In this way, the air tends to be directed towards the central part of the base when installing the device.

[0070] This allows its evacuation towards hole 7 and the elimination of any shrinkage.

[0071] Stopper 8 and hole 7 also advantageously have an appreciably truncated longitudinal section with a reverse orientation to that of base 3, i.e. with a top directed towards the inner face 4 of base 3.

[0072] Such a configuration of hole 7 and stopper 8 ensures a large contact surface between these two parts and thus a good seal.

[0073] Device 2 can be made of various materials and advantageously out of moulded plastic material.

[0074] Therefore, a device 2 in polypropylene with a thickness of base 3 of around 0.5 mm to 1 mm so as to retain a possibility of flexural deformation can be used.

[0075] This slight deformability facilitates the installation and the removal of closing device 2.

[0076] In addition, it allows a radial force of the circumference of base 3 to be applied on the inner wall 13 of container 1 when a force tending to flatten base 3 is applied by the user.

[0077] In another alternative, base 3 can be executed in several materials.

[0078] In particular, base 3 can be generally formed of a polymeric material such as polypropylene and have a different material on its circumference able to ensure better slipping and/or a better sealing relative to inner wall 13.

[0079] Thus, the circumference could be made out of an elastic material such of rubber acting as a seal or be made of tetrafluoroethylene of a kind that will ensure a fatty contact between inner wall 13 and the circumference.

[0080] Of course, any other arrangement is possible and the choice of materials previously indicated is not restrictive.

[0081] Following the embodiment shown on FIGS. 1 and 2, a lid 15 is added on the remainder of the container at the level of the upper edge of container 1.

[0082] Lid 15 can be used to cap the entire container.

[0083] An alternative, as shown on FIG. 5, is a stackable system which consists in adjusting the dimension of bottom 12 of the containers so that they can be inserted at the level of the upper opening of another container in order to produce stacking.

[0084] A flange 14 forms a slightly radial projection over bottom 12 comprising an edge on which bears the upper edge of the opening of container 1.

[0085] Therefore, several containers with similar configuration can be stacked, creating a non-negligible saving of space.

[0086] A possible sequence of operations for the installation on closing device 2 relative to a container 1 is described below.

[0087] Thus, FIG. 6, shows gripping by the user of device 2 using elastic slats 10a, 10b or of stopper 8.

[0088] Device 2 is thus inserted inside container 1.

[0089] When beginning insertion, a slight push by the user on device 2 ensure it descends by sliding along inner wall 13.

[0090] During this phase, the air contained between the upper surface of the product to be packed 6 and internal face 4 of base 3 is expelled by the central hole 7.

[0091] This stage is illustrated on FIG. 7.

[0092] On FIG. 8, device 2 has come into contact with the upper surface of the product to be packed 6 and any residual air has been removed.

[0093] It will be noted that the truncated form of base 3 ensures movement of the air towards the centre of the base for complete evacuation via hole 7.

[0094] The contact between the surface of the product to be packed 6 and base 3 prevents lowering of device 2.

[0095] The user, continuing to exert a pressure, produces deformation of slats 10a, 10b and lowering of stopper 8 inside central hole 7.

[0096] This configuration is shown in FIG. 9.

[0097] Slats 10a, 10b are found in a flexural deformed position to ensure stopper 8 is maintained in an active position.

[0098] In this configuration, there is no layer of air between device 2 and the product to be packed 6 and the closure of central hole 7 prevents any movement of device 2 thus retained by depression.

[0099] FIG. 10 shows a possibility of installing a lid 15 capping the entire container.

REFERENCES

- [0100] 1. Container
- [0101] 2. Closing device
- [0102] 3. Base
- [0103] 4. Internal face
- [0104] 5. External face
- [0105] 6. Product to be packed
- [0106] 7. Hole
- [0107] 8. Stopper
- [0108] 9. Edge
- [0109] 10a, 10a, 10b. Slats
- [0110] 11. Upper edge
- [0111] 12. Bottom
- [0112] 13. Inner wall
- [0113] 14. Flange
- [0114] 15. Lid

1-15. (canceled)

16. Airtight closing device designed to coact with a container of a product to be packed, characterized in that it has a base (3) whose circumference is adjustable to inner wall (13) of container (1) to enable contact to be established with internal face (4) of base (3) and the product by displacement of base (3) which has at least one hole (7) for evacuation of the enclosed air after the installation of base (3), internal face (4) of base (3) with a truncated shape with a summit directed towards the outside of the device, it includes a central hole (7) through base (3) and a stopper (8) for plugging, central hole (7) and stopper (8) have complementary truncated forms with a summit directed towards internal face (4) of base (3).

17. Device according to claim 16, characterized in that base (3) is formed of a semi-rigid material which is elastically deformable when installed.

18. Device according to claim 16, characterized in that the circumference of base (3) is extended by an edge (9) directed towards external face (5) of base (3).

19. Device according to claim 18, characterized in that edge (9) has the same fit as the circumference relative at inner wall (13) of container (1).

20. Device according to claim 18, characterized in that stopper (8) is assembled on base (3) suspended above hole (7)

by at least one deformable elastic slat between a position in which stopper (8) is inactive and a position in which stopper (8) forms an active plug.

21. Device according to claim 20 characterized in that it includes at least two slats (10a, 10b) distributed around hole (7).

22. Device according to claim 21, characterized in that slats (10a, 10b) are joined by their peripheral end of the edge.

23. Device according to claim 21, characterized in that slats (10a, 10b) are configured in order to be stressed in flexure with an arrow directed towards the outside of base (3) when stopper (8) is in the inactive position and with an arrow directed towards base (3) when stopper (8) is in the active plugged position.

24. Device according to claim 16, characterized in that the circumference is made of an elastomer material.

25. Device according to claim 16, characterized in that the circumference is made of tetrafluoroethylene.

26. Airtight container, comprising a container (1) for a product to be packed characterized in that it presents a closing device (2) according to claim 16.

27. Container according to claim 26 characterized in that the circumference of base (3) presents a tight fit but allows installation by hand relative to the inner wall of container (1).

28. Container according to claim 26, characterized in that inner wall of container (1) and the circumference are circular.

29. Container according to claim 26, characterized in that it has a lid (15) capping the upper edge of container (1).

30. Container according to claim 26, characterized in that bottom (12) of the container is configured to coact with the upper edge by standing on a similar container.

31. Device according to claim 17, characterized in that the circumference of base (3) is extended by an edge (9) directed towards external face (5) of base (3).

32. Device according to claim 16, characterized in that stopper (8) is assembled on base (3) suspended above hole (7) by at least one deformable elastic slat between a position in which stopper (8) is inactive and a position in which stopper (8) forms an active plug.

33. Device according to claim 17, characterized in that stopper (8) is assembled on base (3) suspended above hole (7) by at least one deformable elastic slat between a position in which stopper (8) is inactive and a position in which stopper (8) forms an active plug.

34. Device according to claim 19, characterized in that stopper (8) is assembled on base (3) suspended above hole (7) by at least one deformable elastic slat between a position in which stopper (8) is inactive and a position in which stopper (8) forms an active plug.

35. Device according to claim 22, characterized in that slats (10a, 10b) are configured in order to be stressed in flexure with an arrow directed towards the outside of base (3) when stopper (8) is in the inactive position and with an arrow directed towards base (3) when stopper (8) is in the active plugged position.

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