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(54) **PORTIONING DEVICE FOR PACKAGING**

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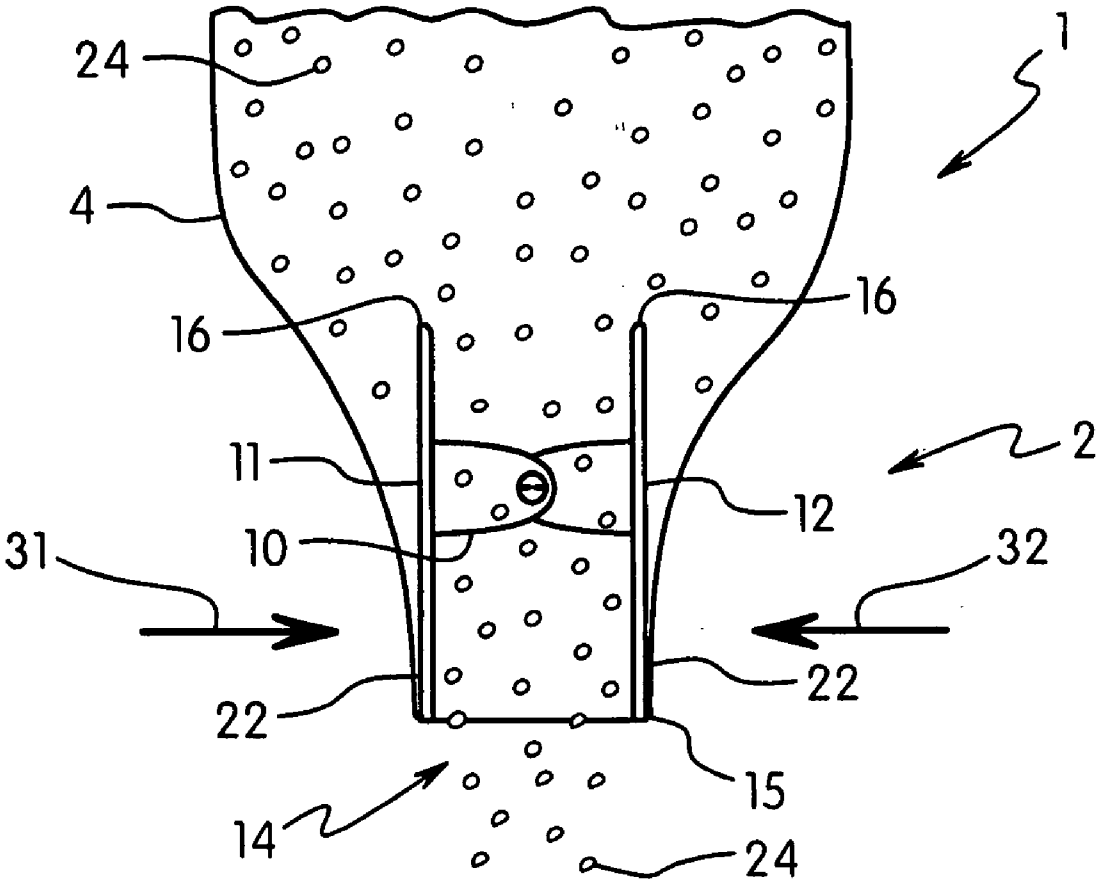
(57) **ABSTRACT**

A packaging device (**2**) for a packaging (**1**) has a chamber (**4**) to accommodate a pourable solid product. This chamber (**4**) can be closed off by a feed device (**2**) neighboring onto this chamber (**4**) whereby, with the feed device in the open position, an outlet (**14**) can be formed at the lower end of the chamber (**4**). The feed device (**2**) exhibits two valve flaps (**11, 12**) which are joined together by means of at least one spring-type element (**10**) such that, when the spring-type element or elements (**10**) are in the closed position, closure edges (**16**) on the valve flaps (**11, 12**) keep the chamber (**4**) closed off from the surroundings. Consequently, by means of pressure (**31, 32**) applied to the valve flaps (**11, 12**), an outlet opening of variable size can be easily achieved and thus, in a simple manner, controlled feed of pourable solid products.



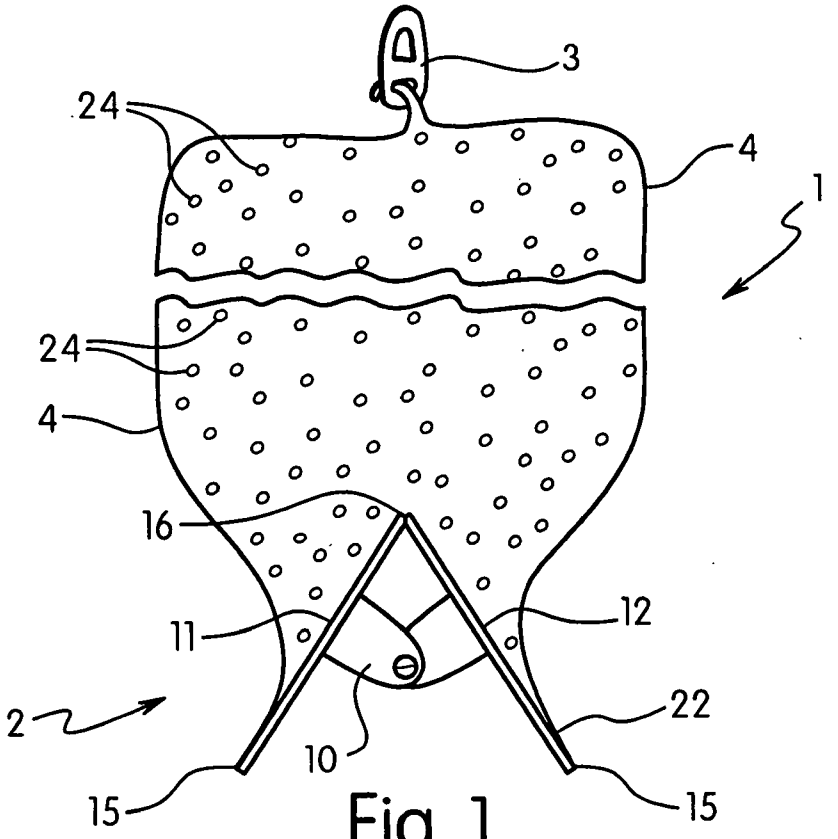

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Fig. 1

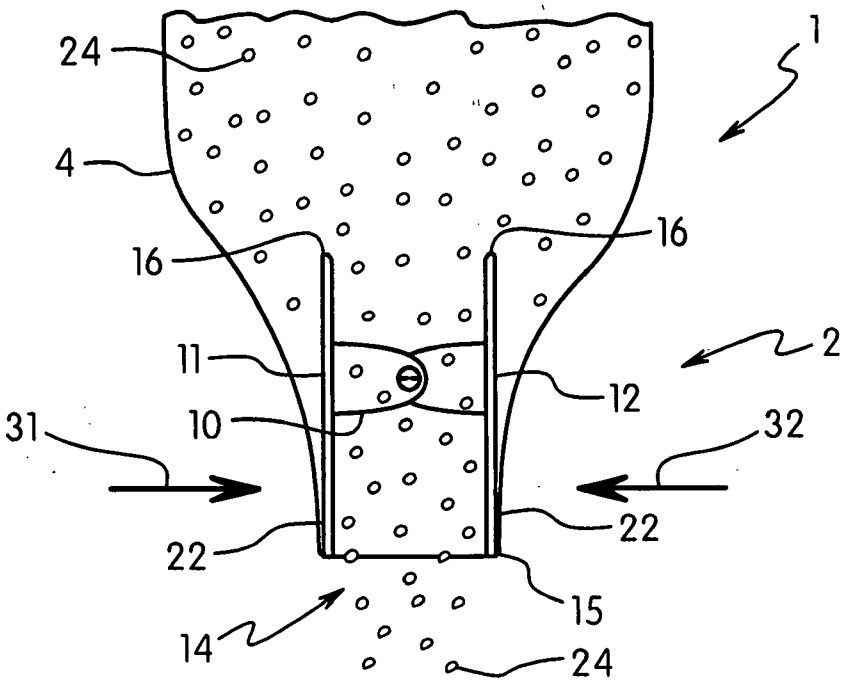
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Fig. 2

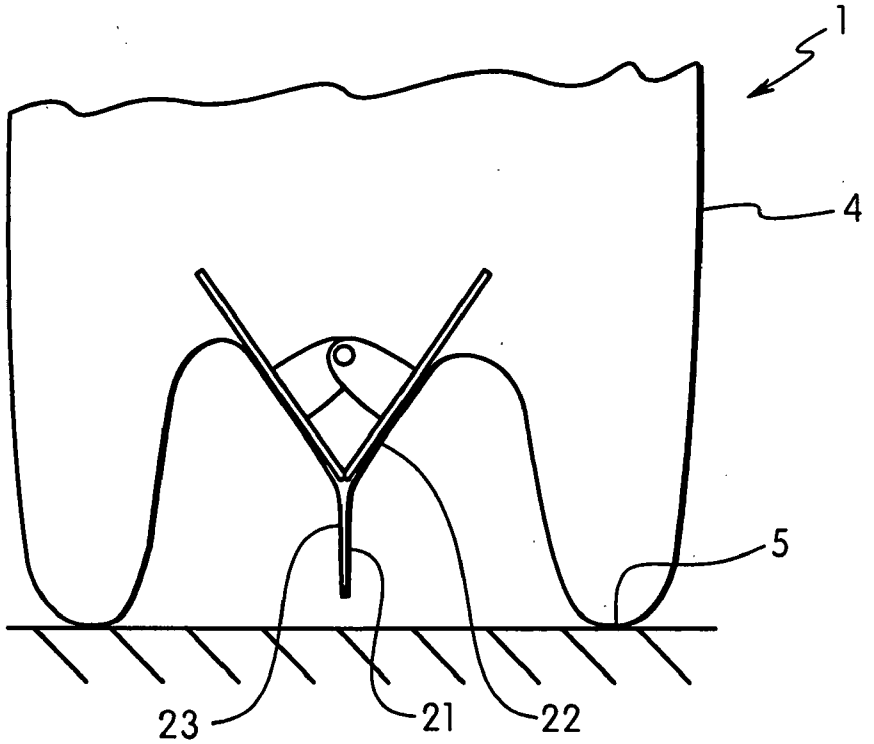

Fig. 3

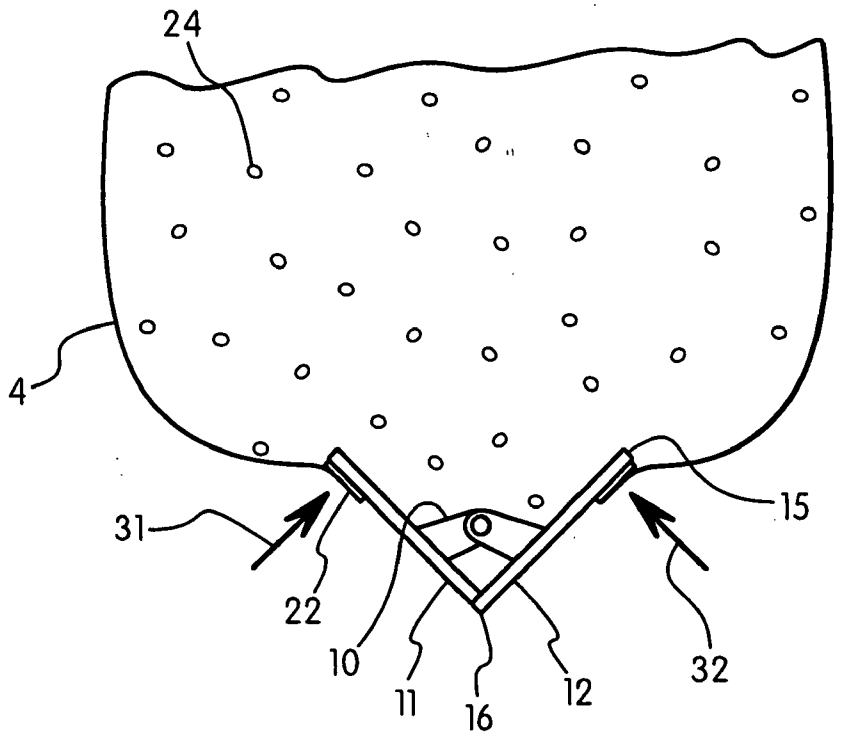

Fig. 4

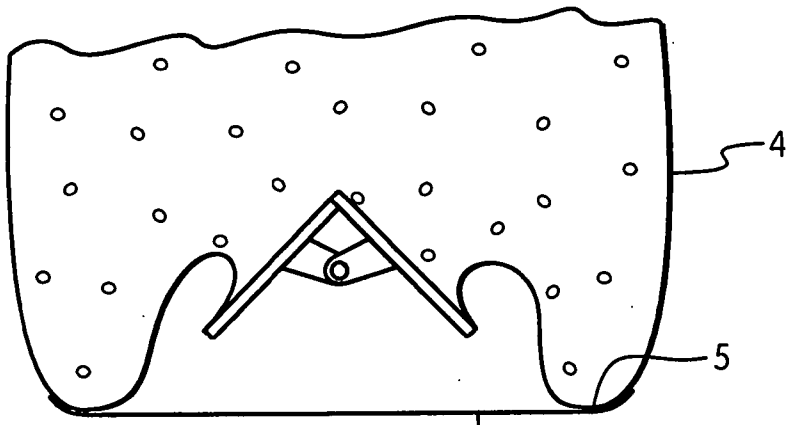

Fig. 5

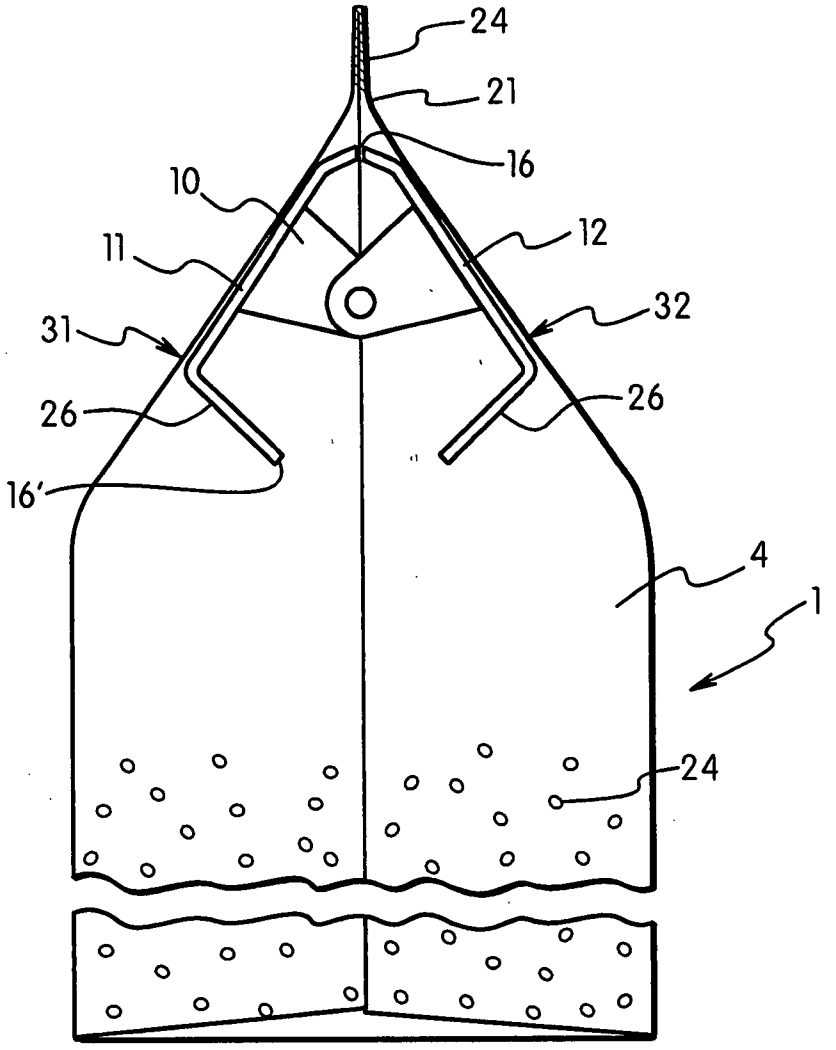

Fig. 6

PORTIONING DEVICE FOR PACKAGING

TECHNICAL ASPECTS OF THE INVENTION

[0001] The invention relates to a portioning device for packaging, having chamber to accommodate a pourable solid product, whereby the chamber can be closed by means of a delivery facility bordering on this chamber and whereby, by means of the delivery facility in an open setting, an outlet can be formed at least in part at one end of the chamber.

STATE-OF-THE-ART

[0002] According to the state-of-the-art a series of devices exist that are known to enable pourable solids to be released from a container. In this connection patent document U.S. Pat. No. 5,692,868 discloses a suspendable device with a deformable storage pouch at the other end of which is a feed device. On opening the outlet and deforming the storage pouch this device permits faster downward feed i.e. emptying of the pourable solids out of the pouch.

[0003] A portion feed device with the above mentioned features is known from U.S. Pat. No. 6,834,995 in which this feed device comprises strings which when pulled control the opening of the lower outlet. The contents of the chamber can then fall out of the chamber without accurately dosed feeding.

[0004] The mechanical properties of the device according to U.S. Pat. No. 6,834,995 make it meaningful for that device to be used for emptying forms of packaging with deformable chamber where the volume of contents of the order of several litres are to be fed completely or without accurate measurement. Such forms of packaging are not intended for an end user and are not very suitable e.g. for packaging animal feed, cleaning agents or other pourable goods etc. in small amounts as, in spite of the size of the packaging, it should also be possible to deliver the material in question in amounts e.g. of the order of grammes. The devices mentioned at the start are not practical for that purpose.

SUMMARY OF THE INVENTION

[0005] Starting from this state-of-the-art, the object of the invention is to make a portion feed device of the kind mentioned at the start which is useable with conventional household products, in particular for forms of packaging which have a formable chamber.

[0006] This objective is achieved by way of the invention in terms of the features according to claim **1**, whereby the portion feed device exhibits two valve flaps which are joined together by means of at least one spring-type element with the result that, when the spring-type element or elements is/are in the inactive state, the closure edges on the valve flaps hold the chamber closed off from the surroundings.

[0007] A portion feed device for packaging has a chamber to accommodate a pourable solid product. This chamber can be closed via a feed facility neighbouring onto this chamber whereby, with the feed facility in an open position, at least a partial opening can be formed at the lower end of the chamber. The feed facility exhibits two valve flaps which are joined together by means of at least one spring-type element such that, when the spring-type element or elements is/are in the inactive position, the closure edges on the valve flaps hold the chamber closed off from the surroundings. This way, by means of pressure on the valve flaps, a more or less large outlet opening can be achieved in a simple manner and with that simple manner of feeding pourable solid products in dosed amounts is possible.

[0008] The device functions as a double flap device for letting out the contents only when these flaps are held pressed, while automatic closure is achieved by releasing the flaps.

[0009] Using such a device it is possible to produce pouches for products of specific amounts, of the order of several kilograms, and which are still easy to handle by the purchaser.

[0010] Finally, these features allow a guarantee against damage to be realised simply by extending an edge of the material forming the chamber, which is closed preventing leakage of the portion feed device.

[0011] The device for portion feeding pourable solids that can be mounted at the opening of a packaging is in a sense integral in that it will be viewed by the user as part of the packaging.

[0012] Further advantageous exemplified embodiments of the invention are described in the secondary claims.

SHORT DESCRIPTION OF THE DRAWINGS

[0013] The invention is described in greater detail in the following with the aid of exemplified embodiments in connection with the attached drawings. These show in:

[0014] FIG. **1** a schematic, partially sectioned, side view of a lower part of a packaging with portioning device according to a first exemplified embodiment of the invention shown in the closed state,

[0015] FIG. **2** a schematic, partially sectioned, side view of the packaging according to FIG. **1** shown in the open state,

[0016] FIG. **3** a schematic, partially sectioned, side view of a packaging in the form of a self-standing pouch with a portioning device according to FIG. **1** before removing an element providing guarantee against damage,

[0017] FIG. **4** a schematic, partially sectioned, side view of a packaging with a portioning device according to a second exemplified embodiment of the invention.

[0018] FIG. **5** a schematic, partially sectioned, side view of a packaging with a portioning device according to a third exemplified embodiment of the invention.

[0019] FIG. **6** a schematic, partially sectioned, side view of a packaging with a portioning device according to a fourth exemplified embodiment of the invention.

DETAILED DESCRIPTION OF EXEMPLIFIED EMBODIMENTS

[0020] FIG. **1** shows a schematic, partially sectioned, side view of a lower part of a packaging **1** with a portioning feed device **2** according to a first exemplified embodiment of the invention. The upper part may be designed as shown in FIG. **2**. The numeral **3** indicates a suspending means onto which a pouch **4** forming a chamber is attached. The suspending

means **3** may also contain an (upper) pouch closure. The pouch may be rigid, semi-rigid or flexible. It may comprise a sack or pouch, made of fibre material, plastic film or other materials; advantageously, the pouch is flexible at least in its lower region. It may be transparent or opaque. Fields of application are animal feed, cleaning agents and/or building materials. Such pouches are offered in retail, often on palettes, so that the pouch material is exposed to external influences. This holds also for the portioning device **2**. One possibility for protecting these portioning devices **2** is descried later in connection with FIG. **3** and FIG. **5**.

[**0021**] The material of the chamber **4** forms a fibre or plastic-based cardboard or pouch. The chamber **4** may e.g. be in the shape of a sack, whereby the portioning device **2** forms a closure of the pouch which was originally closed at both ends. The chamber **4** is then formed by two rectangular films at the sides which are closed by inserting an intermediate part or by closing directly. When using plastic films, it is also possible to employ a cylindrical endless tube-shaped film. At the suspension means the rectangular films can be brought together again and welded, tacked or otherwise closed.

[**0022**] In the simplest exemplified embodiment shown here—when the pouch perpendicular to the plane of the drawing of FIG. **1** is higher, which as a rule will be the case—the portioning device **2** comprises two rectangular, rigid, flat, angular or curved valve flaps **11** and **12** which with the aid of at least one spring-type element **10** are connected in a spring-like fashion. Thereby, the position shown in FIG. **1** is the non-actuated state of the first exemplified embodiment of the invention i.e. the closure edges **16** on the chamber side close the pouch from the surroundings. In other words, the pre-stressing of the spring-type element **10** presses the closure edges **16** of both valve flaps **11** and **12** on the chamber side towards each other and the edges **15** on the side of the surroundings away from each other. Advantageously a plurality, e.g. three such spring type elements **10** are provided along the longitudinal direction (i.e. perpendicular to the drawing plane in FIG. **1**), in order to maintain uniform pressure and pre-stress over the whole breadth of the pouch. Springs may be employed as spring-type elements, such as are found in commercial, so-called clothes pegs in which free ends of a wire start from one free end, form several coils then continue as another free end which, with appropriate pre-stressing, engaged with the valve flaps **11** and **12**. The spring-type elements **10** are therefore compressive springs swivelling about their main axis.

[**0023**] The valve flaps **11** and **12** need not extend over the whole breadth of the chamber **4**; they may also e.g. form one half or ⅔ of the region at the lower end, or be fitted over the corners.

[**0024**] FIG. **2** shows a schematic, partially sectioned side view of the upper and lower part of a packaging with portioning device **2** according to the exemplified embodiment shown in FIG. **1** in which the pourable solid product **24** flows out of the outlet opening. The same numerals indicate the same or similar features in all of the figures. Here the user has applied pressure to the valve flaps **11** and **12** e.g. with one hand as indicated by the arrows **31** and **32**. The pressure has to be applied in the region of the free lower edges **15**, at least below the spring-type elements **10**. This causes the valve flaps **11** and **12** to move around a given axis of the spring-type element or elements **10** perpendicular to the plane of the drawings in FIGS. **1** and **2**; the valve flap edges **16** on the side of the chamber separate from each other and the edges on the side of the surroundings move towards each other. The outlet opening **14** is then largest when the two valve flaps **11** and **12** are parallel to each other, as shown in FIG. **2**.

[**0025**] The pressure has to be applied from the outside through the film of the chamber **4**; usefully an appropriate marking is printed there. The out flowing product **24** is thus in contact with the valve flaps **11** and **12**. These may e.g. be of stable plastic, metal, wood or corrugated cardboard. The spring-type elements **10** made of metal may also be covered with plastic film if the out flowing product should not come in contact with the spring-type elements.

[**0026**] When the desired amount of pourable solid material **24** has been removed, the pressure is removed in the direction of the arrows **31** and **32**, with the result that the chamber side edges **16** of the spring-type elements **10** again move towards each other until they completely close off the chamber. Thereby, it is possible to provide (but not shown here) flexible and sealing wipers on these closure edges **16**. It is also possible for the closure edges **16** to be provided with combs that engage in each other and which, on engaging successively in this region, either presses existing pourable solid material into the chamber or allows it to fall out. By controlling the size of opening **14** and by means of the automatic closure provided by the device **2**, it is possible to achieve simple and for these purpose adequately accurate portion feeding.

[**0027**] In the region of the portioning device **2** the lower edges of the films adhesively bonded at least partially to the wall of the chamber **4**.

[**0028**] The packaging **1** is shown in a vertical position in FIGS. **3** and **5**. It can also be offered for sale this way. The packaging **1** then stands, as shown in FIG. **3** on two regions **5** of the chamber **4** which are filled with material and which are separated from the—in cross-section—triangular portioning device **2**. In particular, the lower parts of the films project out beyond the portioning device shown in FIGS. **1**, **2** and **4**.

[**0029**] The result is an element providing guarantee against damage—indicated here by the numeral **21**. This is in the form of a flat double film i.e. of two films of both lower parts of the said side films, which are joined together at least at corresponding adhesive regions **23** e.g. by adhesive bonding. This way, apart from achieving the closure of the chamber **4** by completely enclosing the portioning device, easy removal of the element **21** providing guarantee against damage is also made possible. It is simple to cut through perpendicular to the plane of the drawing. The pre-stressing of the spring-type elements **10** then closes the chamber via the edges **16**, and the packaging is able to take on a position as shown in FIG. **1**.

[**0030**] Instead of continuing the existing film of the chamber material, areas can be made to project over the under side of the valve flaps **11** and **12** and joined together there, in order to form an element **21** providing guarantee against damage. Instead of adhesively bonded and cut films one may employ struts that can be broken off, or both valve flaps **11**

and **12** are in fact originally in one piece and fitted with joining struts or film-type hinges which form the element **21** providing guarantee against damage and have to be cut through.

[**0031**] FIGS. **1**, **2** and **4** show by way of example so-called self-standing pouches which for portioned feeding can be hung on devices with their standing base head down.

[**0032**] Instead of the advantageous closure of the portioning device **2** by means of the chamber pouch **4** to provide protection against damage, as shown in FIGS. **1** to **3**, the portioning device **2** may in principle also be arranged on the chamber **4** on the outside. FIG. **4** shows a schematic, partially sectioned side view of a form of packaging with a portioning device according to a second exemplified embodiment of the invention. Here, the closure edges **16** are provided on the side facing the surroundings and the free edges **15** are facing the chamber. Here, the forces have to be applied to the valve flaps **11** and **12** above the spring-type elements. The initial forces are thereby directed in the direction of the arrows **31** and **32**, whereby the direction of the turning moment to be applied causes the arrows to be rotated in order to bring the flaps **11** and **12** into a parallel position in which the material **24** can flow out as in FIG. **2**. In this exemplified embodiment of the invention, however, when the portioning device **2** is closed, the weight of the pourable solids product **24** presses on the region of the closure edges **16** of valve flaps **11** and **12**, in contrast to the exemplified embodiment in FIGS. **1** and **2**, where the portioning device **2** is self-closing. Here, the reference number **16** is, as in FIGS. **1** to **3**, used for the closure edges, also when these in this case—in contrast to the above mentioned Fig. with reference to the packaging—are arranged on the outside. The same applies to edge **15**. The portioning device **2** may, however, according to another exemplified embodiment be protected by regions **5**, i.e. arranged recessed as shown in FIG. **3**.

[**0033**] Finally, FIG. **5** shows a third exemplified embodiment of the invention in which the portioning device **2** is arranged with the valve flaps **11** and **12** arranged as in FIG. **1** or FIG. **3**. The difference lies in the design of element **41** providing guarantee against damage. Here, this is in the form of a flat film which is drawn round the standing face **5** of the pouch and joined there with the pouch in a releasable manner. This way, when the portioning device **2** is not in use, the portioning device **2** is kept inside the packaging and so is difficult to damage.

[**0034**] The valve flaps **11** and **12** and the elements **21**, **41** providing a guarantee against damage may also be made of other materials than those mentioned; for example, the latter may be an additional sleeve enclosing the packaging **1**. Other versions are known to the expert in the field. Furthermore, he may interchange any of the features in FIGS. **1** to **3** with features shown in FIG. **4** or FIG. **5**, without departing from the scope of the present invention.

[**0035**] In a further exemplified embodiment shown in FIG. **6** the portioning device **2** does not form the lower closure during storage; instead, the packaging stands on the section on which the suspension means **3** is provided. The suspension means **3** may then also be a loop made of the material from which the pouch is made; in particular, it may comprise a projection, folded part of a side wall film. Then the portioning device **2** stands upwards. Also storage on the side on the mentioned large area of side wall film is possible, so that the portioning device **2** and the suspension means **3** project out from a stack of such packaging.

[**0036**] FIG. **6** also shows a portioning device delivering a portioned amount of material. This is achieved in that the valve flaps **11** and **12** exhibit on their inward directed free edges an approximately L-shaped flap extension **26**, which ends in a portioning feed closure edge **16'**.

[**0037**] The closure on the packaging according to FIG. **6** with element **21** as guarantee against damage is solved as in the exemplified embodiment according to claim **3**.

[**0038**] The version shown in FIG. **6** shows the free-standing pouch in its position when not in use e.g. as it is when being offered for sale. On opening the element **21** providing a guarantee against damage, and after turning the packaging and hanging it up, this is securely closed off by means of the closure flaps **16**. Here, these closure flaps **16** are not an aligned extension of the valve flaps **11** and **12**, but instead are parts bent towards each other so that already in the closed state valve flap faces **11** or **12** are separated from each other. On applying a force as indicated by the arrows **31** and **32**, the closure flaps distance themselves from each other and the portioning closure edges **16'** move towards each other until close on contact. For an expert in the field it is clear that, as a result, pourable solid material **24** is dispensed from the packaging in an amount which is essentially that given by the volume **27** i.e. the volume **27** formed by the polygon which in cross-section is delimited by valve flap areas **11** and **12** and a virtual closure area between the valve flap edges **16'**. On releasing the valve flaps **11** and **12** these return to the starting position shown in FIG. **6** and the closure edges again close the up-ended self-standing pouch.

[**0039**] In other exemplified embodiments this dispensing volume **27** may also be formed in that either only the closure edges **16** and/or also the portioning feed closure edges **16'** are directed towards each other facing the valve flaps **11** and **12** with the result that they enclose the said dosage volume **27**.

[**0040**] In other exemplified embodiments the packaging **1** may also be divided in their length and contain different products which can be removed in separate portioned amounts by way of a series of two valve flaps **11** and **12** arranged in the longitudinal direction of the valve flaps **11** and **12** one behind the other.

[**0041**] It can be seen, especially from FIGS. **1**, **4** or **6**, that the invention also embraces exemplified embodiments in which the portioning device can be later mounted on the packaging. In other words, the portioning device may be a separate element which e.g. in cross-section exhibits only the form shown in FIG. **1** without a pouch-like chamber **4**. An inlet opening may then e.g. be cut into the packaging into which the separate portioning device **2** with valve flaps **11** and **12** can be inserted. The regions indicated by the number **22** in FIGS. **1**, **3** and **4** can then be adhesively bonded to the valve flaps **11** and **12** e.g. with the aid of an adhesive layer in the interior of the pouch which is protected from the pourable material **24** by a protective film, which is removed only to insert the separate portioning device **2**. The end regions of the packaging may also be bent around the edges **15** of the valve flaps **11** and **12** and then held e.g. by a flexible strip to lie around the lower region of the valve flaps

11 and 12, by retaining teeth (which press into the packaging) provided inwards on the surface of the valve flaps and/or other elements known to experts in the field, so that the base of the pouch-type packaging is tensed in a sealing manner around an appropriate tensing device.

[0042] The use of such a separate portioning device 2 is of course particularly easy for the user to employ in the case of a self-standing pouch.

[0043] It is of course to be understood that all essential features in all exemplified embodiments can be combined with all according features in other exemplified embodiments, in particular also the portioning device shown in FIG. 6 with the design of packaging according to FIGS. 1 to 5 or the attachment means for a separate portioning device in the drawings.

REFERENCE LIST

[0044] 1 Packaging

[0045] 2 Portioning device

[0046] 3 Means for suspension

[0047] 4 Chamber

[0048] 5 Region filled with material

[0049] 10 Spring type element

[0050] 11 Valve flap

[0051] 12 Valve flap

[0052] 14 Outlet opening

[0053] 15 Edge on the side of the surroundings

[0054] 16 Closure edge on the side of the chamber

[0055] 16' Portion feed closure edge

[0056] 21 Element providing guarantee against damage

[0057] 22 Bonding regions

[0058] 23 Bonding regions

[0059] 24 Pourable solid material

[0060] 26 L-shaped flap extension

[0061] 27 Volume of portion feed

[0062] 31 Arrow indicating pressure to be applied

[0063] 32 Arrow indicating pressure to be applied

[0064] 41 Element providing a guarantee against damage

1. A portioning device (2) for a packaging (1) with a chamber (4) to accommodate a pourable solid material, whereby the chamber (4) can be closed off by a feed mechanism (2) neighboring onto this chamber and whereby, with the feed mechanism (2) in the open position, at least an outlet (14) on the lower end of the chamber (4) can be formed, the feed device (2) exhibits two valve flaps (11, 12), which are joined together by means of at least one spring-type element (10) such that, when the spring-type element/elements is/are in the resting position, the closure edges (16) on the valve flaps (11, 12) keep the chamber (4) closed off from the surroundings.

2. The device according to claim 1, wherein the chamber walls (4) are of flexible material which, advantageously, form a free-standing area (5) on both sides of the valve flaps (11, 12).

3. The device according to claim 2, wherein the portioning device (2) is integrated within the regions delimited by the free-standing areas (5).

4. The device according to claim 3, wherein the region above the lower side of the valve flaps (11, 12) project out and are joined together there to form an element (21) providing a guarantee against damage.

5. The device according to claim 4, wherein the chamber walls are bonded to the valve flaps (11, 12) in areas (22) in order to close the chamber (4) with the feed device (2) neighboring on to them.

6. The device according to claim 5, wherein the closure edges (16) are arranged on the side facing the surroundings.

7. The device according to claim 6, wherein the two closure edges (16) have wiper elements and/or combs which on closure engage in each other.

8. The device according to claim 7, wherein the spring-type elements (10) are compressive springs which rotate about their main axis.

9. The device according to claim 8, wherein the closure edges (16) and/or edges (16') of the valve flaps (11, 12) facing the valve flaps (11, 12) face each other such that they enclose a dosage volume (27) which can be removed on actuating the device.

10. The device according to claim 9, wherein the device has an attachment facility, by means of which the device can be attached to a form of packaging.

11. The device according to claim 10, wherein the chamber (4) of the packaging is deformable, the portioning device is provided at one end, of the packaging when in use, and at the other end with a facility (3) for hanging up the said packaging.

12. The device according to claim 3, wherein the portioning device (2) is integrated within the regions delimited by the free-standing areas (5) such that the region between the free-standing areas (5) is covered by an element (41) providing a guarantee against damage.

13. The device according to claim 1, wherein the region above the lower side of the valve flaps (11, 12) project out and are joined together there to form an element (21) providing a guarantee against damage.

14. The device according to claim 1, wherein the chamber walls are bonded to the valve flaps (11, 12) in areas (22) in order to close the chamber (4) with the feed device (2) neighboring on to them.

15. The device according to claim 1, wherein the closure edges (16) are arranged on the side facing the surroundings.

16. The device according to claim 1, wherein the two closure edges (16) have wiper elements and/or combs which on closure engage in each other.

17. The device according to claim 1, wherein the spring-type elements (10) are compressive springs which rotate about their main axis.

18. The device according to claim 1, wherein the closure edges (16) and/or edges (16)') of the valve flaps (11,12) facing the valve flaps (11,12) face each other such that they enclose a dosage volume (27) which can be removed on actuating the device.

19. The device according to claim 1, wherein the device has an attachment facility, by means of which the device can be attached to a form of packaging.

20. A device with portioning device according to claim 1, wherein the chamber (**4**) of the packaging is deformable, the portioning device is provided at one end of the packaging when in use, and at the other end with a facility (**3**) for hanging up the said packaging.

21. The device with portioning device according to claim 20, wherein the portioning device is provided at the lower end of the packaging when in use.

22. The device with portioning device according to claim 11, wherein the portioning device is provided at the lower end of the packaging when in use.

* * * * *