(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 599 406 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
05.06.2013 Bulletin 2013/23

(51) Int Cl.:
A47F 1/02 *(2006.01)* ***A47F 1/03*** *(2006.01)*

(21) Application number: **12194720.4**

(22) Date of filing: **29.11.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **29.11.2011 SE 1151135**

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(54) Device for storing and feeding out sell-by-weight loose products

(57) Device for storing and feeding out sell-by-weight loose products, which device comprises; a container (10, 10') having a fill opening and a feed out opening (12); a closure means (30) for preventing access from the exterior to the interior of the container through the feed out opening; and a feeding means for feeding out the product from the interior of the container through the feed out opening. The feeding means comprises a manually manoeuvrable feeding device (20), which feeding device is movably attached to and extends through an exterior wall (32) of the container (10). It exhibits a gripping portion (21) which is arranged outside of the container and a tool portion (22) which is arranged inside the container and adapted for moving the product towards the feed out opening (12) upon manual gripping and manoeuvring of the gripping portion. The feeding device is linearly displaceable along a first axis and pivotal about at least two mutually orthogonal axes. The closure means (30) is connected to the feeding device (20) such that the closure means opens for allowing feed out of the product through the feed out opening upon manual manoeuvring of the feeding device.

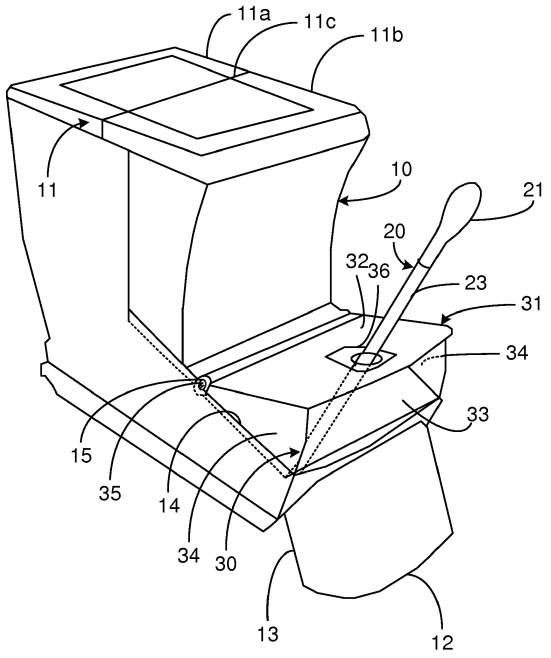

Fig. 2

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Description

TECHNICAL FIELD

[0001] The invention relates to a device for storing and feeding out sell-by-weight loose products. The invention finds application in general stores, for example, for the sale of sell-by-weight loose products, but can also be used in other applications in which sell-by-weight loose products are handled.

BACKGROUND

[0002] In the sale of loose products or commodities which are sold by weight, sometimes referred to as bulk products or bulk inventory, such as, for example, sweets, tea, grains, nuts and the like, different systems for storing and making the products available to the customers are used. The systems often comprise one or several containers for storing the products. The containers are placed in a shop and arranged such that the customers may transfer the product from the storage container to a bag or the like carried by the customer. The customer may thereafter bring the bag to the shop's till for weighing and payment.

[0003] Where the shop provides several varieties of a certain product, it is usual for a number of storage containers corresponding to the number of product varieties to be placed adjacent to one another, often in a matrix containing horizontal rows and vertical columns of containers. The customer may then simply pick or feed out the desired quantity of each product variety and transfer it to a common bag for mixing the product varieties. This type of sale of sell-by-weight loose products allows an effective utilization of space for the shopkeeper, low packaging consumption and wide freedom of choice for the customer to buy the desired quantity and product mix. By suitable shaping of the containers, it is also possible for the products to be displayed in a clear and appealing manner, which provides good customer information and, moreover, can help to promote increased sales.

[0004] The systems may be divided into two general groups comprising open systems and closed systems. At the open systems, the customers may gain access to and come in direct contact with the product stored inside a storage container. Typically at the open systems, the customer uses a spoon or a scoop to transfer the product from the storage container to a bag or the like. At the closed systems, direct contact is prevented and the systems are designed such that the product may be fed out without allowing the customer to touch the product before it has left the storage container.

[0005] Previously known open systems for the sale of sell-by weight loose products often comprise a storage container with a front serve opening, which is easily accessible to the customer. Normally a spoon or a scoop is provided in proximity to the container such that the customer may serve a desired quantity of the product without touching the product by his or her fingers. On a rear portion of the container, a fill opening can be arranged. In order to reduce the risk of penetration by foreign objects and particles, such as dust and litter, the serve and fill openings are usually provided with hinged lids that can be in an open or closed position. In order to ensure easy access to the product through the serve opening, the container may comprise a bottom wall which slopes downwards in the direction of this same opening. When a certain quantity of product is served or picked out, a corresponding quantity of the product in the container hence slides down to the space proximate to the serve opening, for easy access for the next customer. EP 2394535 A1 discloses an example of such a known open system.

[0006] Such open systems are sometimes not desirable since the accessibility to the interior of the container may be considered to constitute a risk of contaminating the products stored in the container.

[0007] At the closed systems, the risk of contamination of the product in the storage container is reduced since access to the interior of the container is prevented. EP 2 294 948 A1 discloses a closed system comprising a so called gravity-fed bin. This device comprises a housing with an internal cavity and a lower dispensing area which is contiguous to an output portal in the form of a feeding spout. A dispensing actuator is pivotally attached to the housing and coupled to a gate which is arranged in an opening arranged between the internal cavity and the feeding spout. By manoeuvring the dispensing actuator, the user may open the gate such that the bulk product stored in the cavity is allowed to flow out through the feeding spout under the influence of gravity. The so-dispensed product may be collected in a receptacle which is held by the user underneath the feeding spout. When the desired quantity has been dispensed the dispensing actuator is released whereby the gate is closed.

[0008] Such a gravity-fed closed system for storing and dispensing bulk products exhibit advantages in that they prevent the customers from coming in direct contact with the product stored therein. Thereby, the risk of contamination of the product is reduced. The closed systems are often considered to be more hygienic than the open systems, which enhances the sale of the product, to the benefit of the shopkeeper.

[0009] However, the gravity-fed closed systems have proven to exhibit severe disadvantages when it comes to dispensing certain types of products. Examples of such products which are problematic to dispense by closed systems are certain types of sweets and candy. Especially sweets that have a sticky surface and a comparatively non-rigid or soft consistency tend to stick together and to form lumps or chunks, which often results in that the interior passages of the container and its feed-out arrangement are blocked or clogged. It has for example proven that sweets of the jelly consistency type such as jelly worms and jelly babies and especially larger types of jelly sweets are very difficult to dispense by closed

systems. Each individual item of such larger types of jelly sweets may typically have a longitudinal extension of up to 5 cm or even more. Typically, the passages which exhibit the smallest cross-sectional area, such as the gate, valve or other means for regulating the feed-out flow of the product, are particularly exposed to such blocking or clogging. Also in cases where it is possible to dispense these kinds of sticky products, the formation of lumps makes it very difficult if not impossible to correctly dispense the desired amount of the product.

[0010] In the past, considerate efforts have been laid down for solving this problem of storing and dispensing sticky and soft bulk products by closed systems. Various systems and devices incorporating different types of automatic feed out means, such as rotating and sliding valve members, feed worms, driven endless belts and feed plungers have been tried. However, no satisfactory solution to the problem has been presented hitherto. US 4,718,578, GB 2 254 315 A and US 4,889,263 disclose different closed systems for dispensing bulk goods. These systems comprise a tool which is manually manoeuvrable from the outside of a container and which extends to the inside of the container. Hereby a user may manually push the goods in the container towards an outlet port of the container by manipulating the tool from the outside. In order to accomplish the closed functionality of the container, these systems are all provided with a manually operated outlet gate. Hence, in order to complete a dispensing operation these systems require that the user separately operates the tool and the outlet gate. This requirement of dual operation results in a considerable disadvantage since it requires the user to utilize both hands during the dispensing operation, thereby requiring the receiving receptacle to be first attached to the container or otherwise held in place at the outlet port.

SUMMARY OF THE INVENTION

[0011] It is therefore an object of the invention to provide an enhanced device for storing and feeding out sell-by-weight loose products.

[0012] It is a further object to provide such a device by which it is possible to store and readily feed-out any desired quantity of various types of products while preventing access from the outside to the product stored inside the device.

[0013] It is another object to provide such a device which allows for an easy and fast one-hand operation of the device for accomplishing feed-out of any desired quantity.

[0014] It is still a further object to provide such a device which allows easy and precise feed-out also of bulk products having a comparatively sticky outer surface and soft consistency.

[0015] It is an additional object to provide such a device which is simple in construction and reliable in use.

[0016] A still further object is to provide such a device which allows a favourable display of the product stored therein.

[0017] These and other objects are achieved by a device according to the preamble of claim 1, which device exhibits the special technical features as set out in the characterizing portion of claim 1.

[0018] The device is arranged for storing and feeding out sell-by-weight loose products. The device comprises; a container having a fill opening and a feed out opening, a closure means for preventing access from the exterior to the interior of the container through the feed out opening, and a feeding means for feeding out the product from the interior of the container through the feed out opening. The feeding means comprises a manually manoeuvrable feeding device. The feeding device is movably attached to and extends through an exterior wall of the container. The feeding device exhibits a gripping portion which is arranged outside of the container and a tool portion which is arranged inside the container and adapted for moving the product towards the feed out opening upon manual gripping and manoeuvring of the gripping portion. The feeding device is further linearly displaceable along a first axis and pivotal about at least two mutually orthogonal axes. The closure means is connected to the feeding device such that the closure means opens for allowing feed out of the product through the feed out opening upon manual manoeuvring of the feeding device.

[0019] Since the device comprises a closure means for preventing access from the exterior to the interior of the container through the feed out opening, the risk of contamination of the product is kept low. The arrangement of the displaceable and pivotal feeding device allows the user to manually and intentionally manoeuvre a feeding device, which comprises a gripping portion outside of the container and a tool portion which is arranged inside the container to actively or forcibly move the product towards the feed out opening. By this means the device allows the user to use his or her perception to consciously manipulate the tool portion of the feeding device. By such conscious manipulation it is possible e.g. to separate, from each other, individual product items that stick together and to push or drag single or a desired number of such items towards the feed out opening. The device thus allows the user to use his or her intellect to actively manipulate the feeding device for separating and feeding out the desired product amount. Hereby, it has proven possible to store and feed out products which previously where considered not suitable for being stored and fed out by closed systems. Examples of such products which have proven possible to store and feed out by the inventive device are sticky and soft sweets such as jelly babies and also the comparatively large, sticky and soft jelly worms. The arrangement of the closure means being connected to the feeding device further results in an automatic opening of the closure means upon manoeuvring of the feeding device. Hereby the feed-out operation is greatly facilitated. Especially, the feed-out operation may be fully completed through a one-hand operation, whereby he user's second hand may be used e.g. for holding

a receptacle at the feed out opening during the feed out operation. This may be of great importance e.g. in applications where the user should place and hold a bag or another receptacle at the feed out opening for collecting the product being fed out.

[0020] The feeding device may be movably attached to an exterior wall of the container, which exterior wall is hinged to at least one adjacent wall of the container and wherein the closure means comprises an interior wall which is fixed to said exterior wall and which, together with the exterior wall, is movable between a closed position at which the feed out opening is closed and an open position at which the feed out opening is open. By this means automatic opening of the closure means upon manual manoeuvring of the feeding device is achieved in a simple, cost efficient and reliable manner involving a comparatively low number of movable parts.

[0021] The closure means may comprises a valve member which is movable between a closed position at which the feed out opening is closed and an open position at which the feed out opening is open and wherein the feeding device is connected to the valve member by means of a mechanical coupling which is arranged to move said valve member towards the open position when the tool portion of the feeding device is moved towards the feed out opening. This allows for an alternative design which allows for an automatic opening in a simple, cost efficient and reliable manner.

[0022] The mechanical coupling may comprise a flexible wire which is fixed to the feeding device and to the valve member. This allows for a simple and reliable design at a very low cost.

[0023] Alternatively the mechanical coupling may comprise a link mechanism which is connected to the feeding device and to the valve member. By this means the mechanical coupling may be arranged also to accomplish or ensure closure of the closure means when the tool portion is moved in a direction away from the feed out opening.

[0024] The feeding device may be pivotal about three mutually orthogonal axes, one of which axes is the first axis. By increasing the freedom of motion of the feeding device in relation to the container, the possibility for the user to freely manipulate the feeding device is increased. At some applications it might be sufficient that the feeding device is axially displaceable and pivotal about two axes for allowing sufficient manipulation. At more demanding applications however it is preferred that the feeding device, in addition to be axially displaceable also is pivotal about three mutually orthogonal axes.

[0025] The feeding device may comprise a generally elongated portion with a general direction of elongation which defines the first axis. By this means, accurate and precise manoeuvring involving comparatively large movements of the tool portion is made possible in a simple, reliable and cost efficient manner.

[0026] A user may be able to manipulate the feeding device such that individual product items are moved towards the feed out opening with out being able to see the product through the container wall. However, the ability of the user to actively and deliberately manoeuver the feeding device for an efficient feeding out of a desired product amount is greatly enhanced if the user is able to see the product. Therefore, it is preferred that at least a portion of the container is made transparent. Such a transparent portion should preferably comprise the wall portions of the container which are arranged between the user's eyes and the operational area of the feeding device's tool portion.

[0027] In some applications it may be advantageous if the entire container is made of a transparent material. At such an embodiment the possibility to study the product and any lumps formed therein is further enhanced. This embodiment further allows for an enhanced visible display of the product stored in the container.

[0028] The feed out opening may be arranged at a feed out chute. Hereby, the feeding device may be used for actively moving the product by pushing or dragging it to the feed out chute. The ultimate feed out thereafter is achieved by means of the gravitation acting on the product. This facilitates e.g. collection of the fed out product since a collecting receptacle may be positioned and held such that the fed out chute is positioned inside the receptacle.

[0029] The closure means may comprise a one way valve allowing products to be fed out and preventing insertion of objects from the exterior into the container. Hereby, easy feed out is combined with an efficient means for preventing contamination of the product in a simple and cost efficient manner.

[0030] The one way valve may in such cases be arranged in a feed out chute and may comprise a pretensioned valve member, which is arranged to open in the feed out direction under the gravitational influence of the product when positioned on the valve member. The pretension of the valve member is applied in the closing direction such that the combination of obstructing introduction of foreign objects and allowing feeding out of the product is achieved in a simple, reliable and cost efficient manner.

[0031] Further objects and advantages of the invention will be apparent from the following detailed description of embodiments and from the appending claims.

[0032] Generally, all terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the element, apparatus, component, means, step, etc." are to be interpreted openly as referring to at least one instance of the element, apparatus, component, means, step, etc., unless explicitly stated otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly stated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] The invention is now described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a device according to the invention, and illustrates the device in a closed operational mode.

Fig. 2 is a perspective view of the device shown in fig. 1 and illustrates the device in an open operational mode.

Fig. 3 is a perspective view of a feeding device comprised in the device shown in figs. 1 and 2.

Fig. 4 is a perspective view of a system comprising two devices of the type shown in figs 1 and 2 with the respective feeding device removed and arranged in a side by side configuration.

DETAILED DESCRIPTION

[0034] The invention will now be described more in detail with reference to the accompanying drawings, in which certain embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout the description.

[0035] The device shown in figs. 1 and 2 comprises a container 10 and a feeding means in the form of a feeding device 20. The container 10 comprises a number of walls which together define an interior space for storage of sell-by-weight loose products, such as sweets, candy, peanuts, cereal, thee, coffee and the like. The device is especially suitable for storage and feeding out of such loose products which exhibit a sticky surface, possibly in combination with a comparatively soft consistency and products which otherwise have a tendency to form lumps comprising a plurality of individual product pieces or items. Examples of such products are jelly sweets such as jelly babies and large jelly worms. The container 10 further has a rear side and a front side, which front side is intended to be arranged proximal to the user. Two mutually parallel and generally planar lateral sides extend between the rear and front walls. By this means, several containers may be arranged side-by-side as indicated in fig. 4, which shows two such containers arranged side-by side. The walls forming the rear, front and lateral sides are made of a transparent polymeric material. In this way, a favourable and appealing display of the stored products may be achieved. As will be explained more in detail below, the transparency of at least some portions of the container walls also facilitates the user's manoeuvring of the device.

[0036] The container exhibits an upper fill opening which, in normal use, is covered by a removable lid 11. In the exemplifying embodiment, the lid 11 comprises two parts 11a, 11b which are hinged to each other such that the fill opening may be accessed by pivoting a front part 11a of the lid 11 about a hinge axis 11c which extends between and perpendicularly to the lateral sides of the container 10.

[0037] A feed-out opening 12 is arranged at a front portion of the container 10. The feed-out opening is arranged at a first end of a feed-out chute 13. The feed-out chute 13 comprises a second end which is arranged at a front wall of the container, such that the chute communicates with the interior space of the container 10. A chute entrance opening is thus formed at the intersection between said front wall and the chute 13.

[0038] The container further comprises a bottom wall 16 which is arranged sloping from a rear portion of the container towards the chute entrance opening. The sloping bottom wall 16 allows for gravity feeding of products towards the chute entrance opening, which facilitates feeding out of the product and also contributes to ensure that the first-in-first-out principle may be applied when storing products in the container.

[0039] The container further comprises a closure means 30 for preventing access from the exterior to the interior of the container 10, through the feed out opening 12. The closure means 30 comprises a door member or shutter 31 which forms an exterior wall of the container and which is hinged to the remainder of the container 10. The shutter 31 comprises a top wall 32, a front wall 33 and two lateral side walls 34. The front wall 33 and lateral side walls 34 are received in a corresponding rectangular opening 14 of the container 10, with a close fit. The top wall 32 is dimensioned such that it covers the entire opening 14 when the shutter 31 is in a closed position as shown in fig. 1. A laterally protruding pivot pin 35 is arranged at each lateral side of the rear edge of the shutter's 31 top wall 32. Each pivot pin 35 is received in a respective pivot pin seat 14 which is fixed to the edge of the opening 14 of the container. The shutter 31 is thereby pivotal in relation to the remainder of the container 10, between a closed position as shown in fig. 1 and an open position as shown in fig. 2.

[0040] In the closed position, the top wall 32 covers the entire opening 14 of the container. It is thus not possible to access the interior of the container via the opening 14. Additionally in the closed position, front wall 33 covers the chute entrance opening. Thereby the front wall 33 prevents product to exit the container via the chute 13 and also any foreign objects to be introduced into the container's 10 interior space, through the feed-out opening 12 and the chute 13.

[0041] When the shutter 31 has been pivoted to its open position, as shown in fig. 2, the top wall 32, the front

wall 33 and the side walls 34 of the shutter 31 still prevent access to the interior of the container 10 through the opening 14. In the open position however, the front wall 33 of the shutter 31 has come clear from the chute entrance opening, such that products may be moved from the interior of the container to the chute entrance opening. Therefrom, the products may be fed out through the chute 13 and feed-out opening 12 under influence of the gravity acting on the products.

[0042] As best illustrated in fig. 3, the feeding device comprises a grip portion 21 and a tool portion 22. The exemplifying feeding device 20 further comprises a generally elongated portion in the form of a cylindrical rod 23. The grip portion 21 and the tool portion 22 are fixed to a respective end of the rod 23. The grip portion 21 and/or the tool portion may be releasably fixed to the rod 23 for facilitating mounting of the feeding device to the container. In the embodiment illustrated in the figures, the tool portion 22 is shaped generally as a shovel or scoop. A stop member in the form of a resilient O-ring 25 is threaded onto the rod 23 with a snug fit.

[0043] As best seen in figs. 1 and 2, the feeding device 20 is movably attached to the container 10. In the exemplifying embodiment the rod 23 of the feeding device 20 is received in a circular opening 36 which is arranged through the top wall 32 of the shutter 30. The feeding device 20 is mounted such that the grip portion 21 is arranged outside of the top wall 32, whereas the O-ring 25 and the tool portion 22 are arranged inside of the top wall 32 and the circular opening 36. The diameter of the circular opening 36 is slightly greater that the outer diameter of the rod 36, such that the rod 23 and the feeding device may be moved relative to the shutter 30 and the remainder of container 10. The movement of the feeding device 30 is limited by means of the O-ring 25, the tool portion 22 and the grip portion 21, which all have outer dimensions exceeding the diameter of the circular opening 26. By this means the feeding device 20 is movably attached to the exterior top wall 32 of the shutter 30 and the container 10.

[0044] This way of attaching the feeding device 20 to the container 10 allows the feeding device to be linearly displaceable along the longitudinal axis of the rod 23, pivotal about the same longitudinal axis of the rod 23 and pivotal about two further axes which are orthogonal to each other and to said longitudinal axis of the rod 23.

[0045] In the following the use and operation of the device will be explained in some more detail. The shutter 31 is normally in its closed position shown in fig. 1. In this position products may be filled into the container 10 through the fill opening after opening the front part 11a of the lid 11. Products filled into the container 10 may be stored therein and displayed to customers through its transparent walls. The sloping bottom wall 16 ensures that products is gravity fed towards the feed-out chute 13 such that there is always products available for being fed-out or dispensed, in the proximity to the feed-out chute 13. Since the front wall 33 of the shutter covers the chute entrance opening, the product is prevented from exiting the container 10.

[0046] When a user wants to feed-out a certain amount of the product from the container, he or she places a receptacle, a bag or the like at the feed-out opening 12 arranged at the chute 13. The outer dimensions of the chute may be chosen such that the feed-out opening 12 may be positioned inside a receptacle intended for use with the device, in order to minimize the risk of spillage.

[0047] Thereafter, the user grips the grip portion 21 of the feeding device 20 for manual manoeuvring of the feeding device 30. The feeding device 30 may be manoeuvred such that the tool portion 22 is used for separating any desired number or amount of individual product items from the product bulk stored in the container. In the exemplifying embodiment such manoeuvring is facilitated by the fact that the user may visibly observe the product though the transparent walls of the container. It has however proven that it is possible also to blindly separate a desired amount of the product from the bulk. This is explained essentially by the fact that the user may analyse the state or condition of the bulk product and the degree of lumping, by means of his or her perception of touch transmitted through the feeding device. Hence, also at containers which are not transparent the user may concisely manoeuvre the feeding device such that a desired number or amount of products is separated from the bulk of product stored in the container.

[0048] The user also manoeuvres the feeding device 20 for moving, e.g. by pushing or dragging, the separated desired product amount towards the chute entrance opening. At such a movement of the feeding device 20 the rod 23 assumes an increasing angle in relation to the top wall 32, as indicated in fig. 2. The rod portion 23 will thereby contact and interact with the edge of the circular opening 36 of the shutters top wall 32 and thereby bring about a pivotal movement of the shutter 31 such that it assumes its open position. It should be noted however that the shutter 31 may be moved to its open position also by many other possible movements of the feeding device 20 and also, if deemed necessary, by simply gripping and lifting e.g. the top wall 32 of the shutter 31.

[0049] When the shutter 31 has assumed its open position and the feeding device 20 has been used for moving the desired product amount through the chute entrance opening into the chute, the desired product amount will fall through the chute and the feed-out opening 12 into the receptacle.

[0050] The feed-out operation may naturally be repeated until a desired amount of the product has been collected in the receptacle. When the user thereafter lets go of the feeding device 20 the shutter 31 will once again, under the influence of gravity pivot down to its closed position shown in fig. 1.

[0051] The inventive device hence provides an easy to use and reliable means for storing in a closed container and for feeding out a desired amount of a bulk product also when the product comprises products that are sticky

and soft or otherwise difficult to feed-out from previously closed systems.

[0052] In fig. 4 it is illustrated how two devices according to the invention may be arranged side by side for forming a system. In fig. 4 the feeding devices have been omitted such that only the containers 10, 10' are shown. The feed-out chute 12, 13' of the two containers 10, 10' exhibit somewhat different shapes, which shapes are suited for different types of products and different types of receptacles.

[0053] The invention has mainly been described above with reference to a few embodiments. However, as is readily appreciated by a person skilled in the art, other embodiments than the ones disclosed above are equally possible within the scope of the invention, as defined by the appended patent claims.

[0054] The feeding device may for example be movably attached to the container in many different manners. One alternative example is that an exterior wall of the container is provided with a seat in which a ball is movably received and held in place. The ball exhibits a rectilinear bore which receives a cylindrical rod portion of the feeding device. By this means the feeding device may be axially displaceable and pivotal about its longitudinal axis in relation to the ball. The ball and the feeding device received therein may in turn be pivotal about two mutually orthogonal axes in relation to the exterior wall of the container.

[0055] Instead of arranging the closure means as a shutter comprising the exterior wall at which the feeding device is movably attached, the closure means may be connected to the feeding device in other manners. The closure means may e.g. comprise a valve member which is arranged in proximity to the feed out opening and pivotal between a closed position and an open position. For effecting automatic opening of the valve member when the feeding device is manoeuvred for feeding out goods, the feeding device may be mechanically connected to the valve member, e.g. by means of a flexible wire or a link mechanism. The closure means may also comprise a one way valve which is arranged inside a feed out chute down stream of the shutter or the valve member. Such a one way valve may comprise a pretensioned valve member which normally is held in a closed position and which opens in the feed out direction under the influence of gravity acting on products that have been feed to or fallen onto the valve member.

[0056] The device may also comprise additional means for preventing insertion of foreign objects into the container. The chute may for instance be formed with dimensions such that introduction of fingers or an human arm into the container is made impossible. Alternatively or in combination sharp or pointed needles or the like may be arranged in a chute or in another kind of feed out channel, such that introduction of human body parts entails a risk of injury.

Claims

1. Device for storing and feeding out sell-by-weight loose products, which device comprises;

   - a container (10, 10') having a fill opening and a feed out opening (12);
   - a closure means (30) for preventing access from the exterior to the interior of the container through the feed out opening; and
   - a feeding means for feeding out the product from the interior of the container through the feed out opening, which feeding means comprises a manually manoeuvrable feeding device (20), which feeding device is movably attached to and extends through an exterior wall (32) of the container (10) and exhibits a gripping portion (21) which is arranged outside of the container and a tool portion (22) which is arranged inside the container and adapted for moving the product towards the feed out opening (12) upon manual gripping and manoeuvring of the gripping portion, said feeding device being linearly displaceable along a first axis and pivotal about at least two mutually orthogonal axes, **characterized in that** the closure means (30) is connected to the feeding device (20) such that the closure means opens for allowing feed out of the product through the feed out opening upon manual manoeuvring of the feeding device.

2. Device according to claim 1, wherein the feeding device (20) is movably attached to an exterior wall (32) of the container, which exterior wall is hinged to at least one adjacent wall of the container and wherein the closure means (30) comprises an interior wall (33) which is fixed to said exterior wall (32) and which, together with the exterior wall, is movable between a closed position at which the feed out opening (12) is closed and an open position at which the feed out opening is open.

3. Device according to claim 1 or 2, wherein the closure means comprises a valve member which is movable between a closed position at which the feed out opening is closed and an open position at which the feed out opening is open and wherein the feeding device is connected to the valve member by means of a mechanical coupling which is arranged to move said valve member towards the open position when the tool portion of the feeding device is moved towards the feed out opening.

4. Device according to claim 3, wherein the mechanical coupling comprises a flexible wire which is fixed to the feeding device and to the valve member.

5. Device according to claim 3, wherein the mechanical

coupling comprises a link mechanism which is connected to the feeding device and to the valve member.

6. Device according to any of claims 1-5, wherein the feeding device (20) is pivotal about three mutually orthogonal axes, one of which is the first axis.

7. Device according to any of claims 1-6, wherein the feeding device (20) comprises a generally elongated portion (23) with a general direction of elongation which defines the first axis.

8. Device according to any of claims 1-7, wherein at least a portion of the container (10) is transparent.

9. Device according to claim 8, wherein essentially the entire container (10) is made of a transparent material.

10. Device according to any of claim 1-9, wherein the feed out opening (12) is arranged at a feed out chute (13).

11. Device according to any of claims 1-10, comprising a one way valve allowing products to be feed out and preventing insertion of objects from the exterior into the container.

12. Device according to claim 11, wherein the one way valve is arranged in a feed out chute and comprises a pretensioned valve member, which is arranged to open in the feed out direction under the gravitational influence of the product when positioned on the valve member.

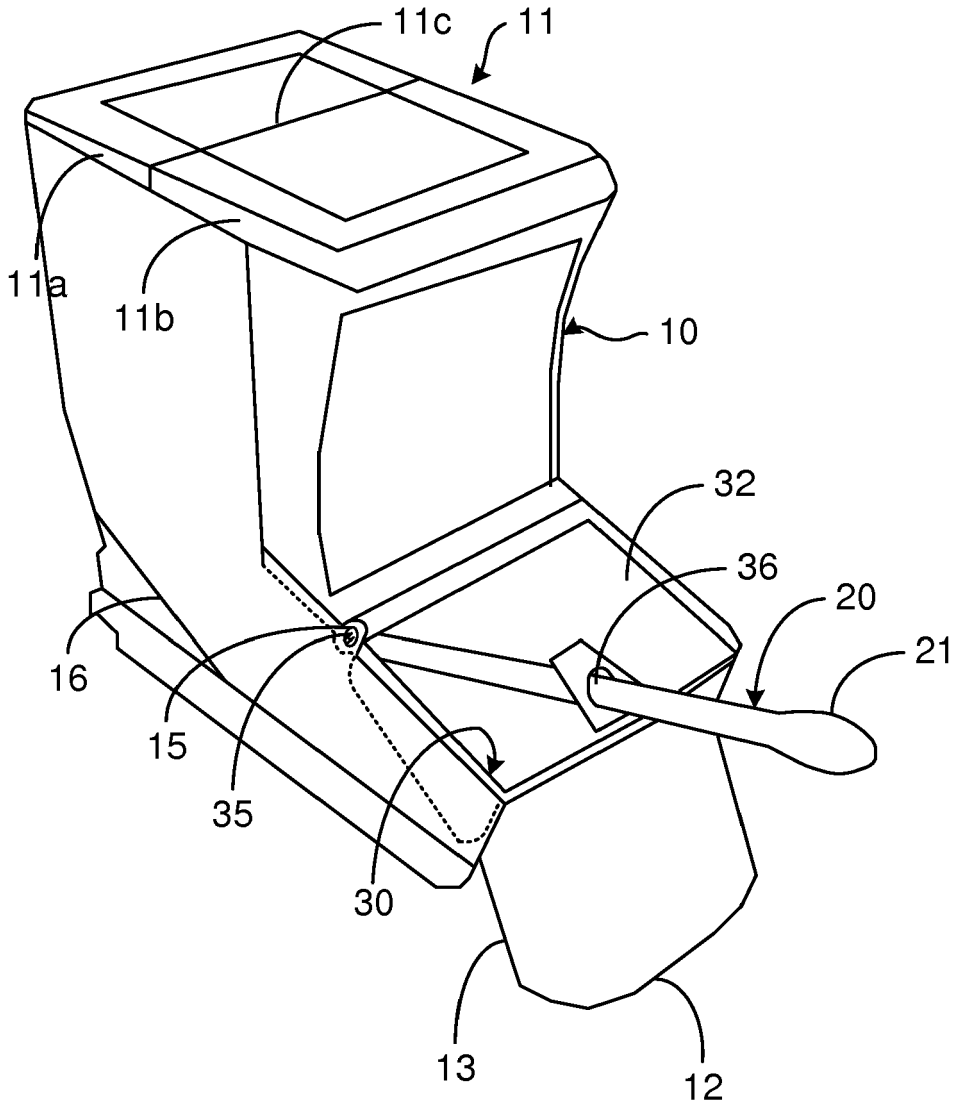

Fig. 1

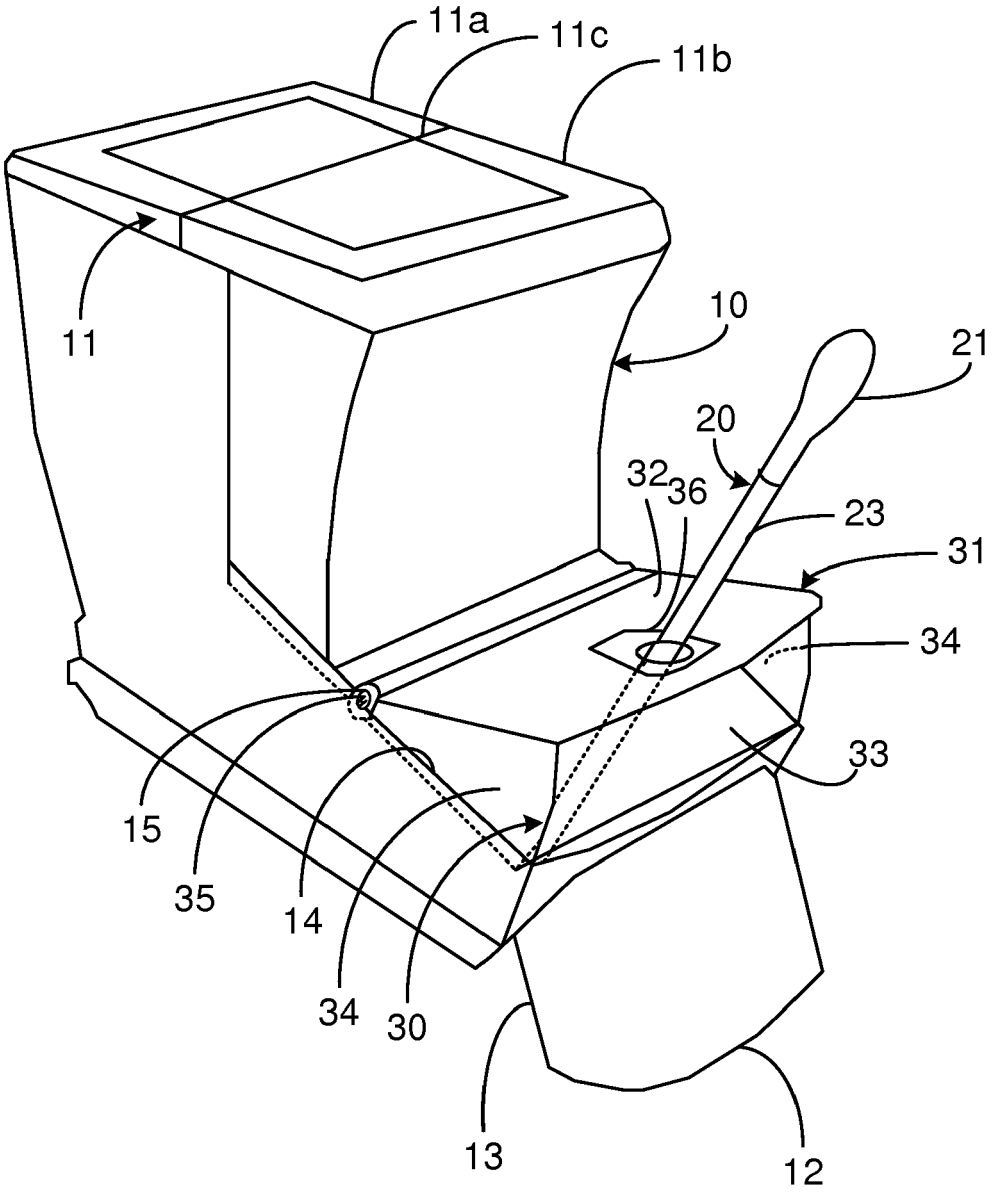

Fig. 2

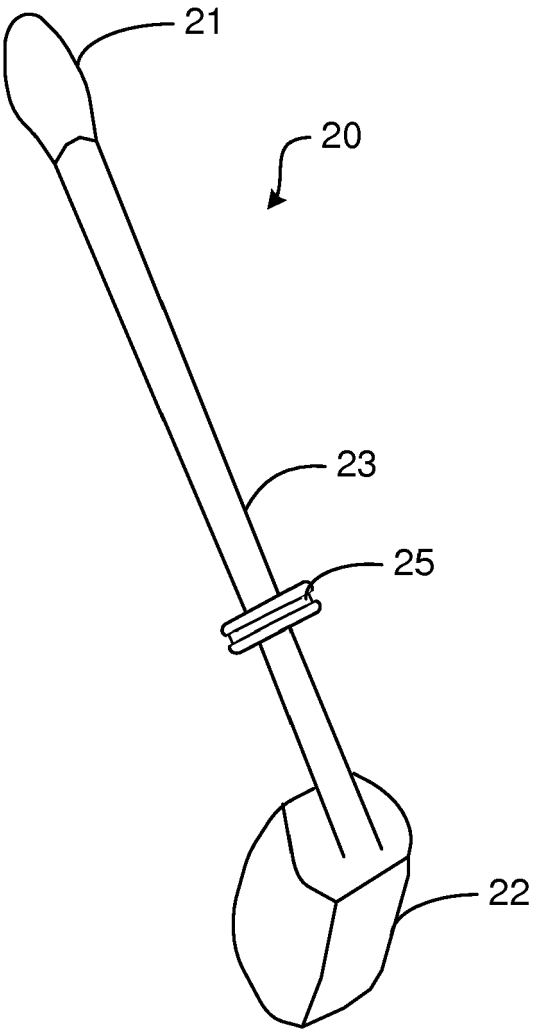

Fig. 3

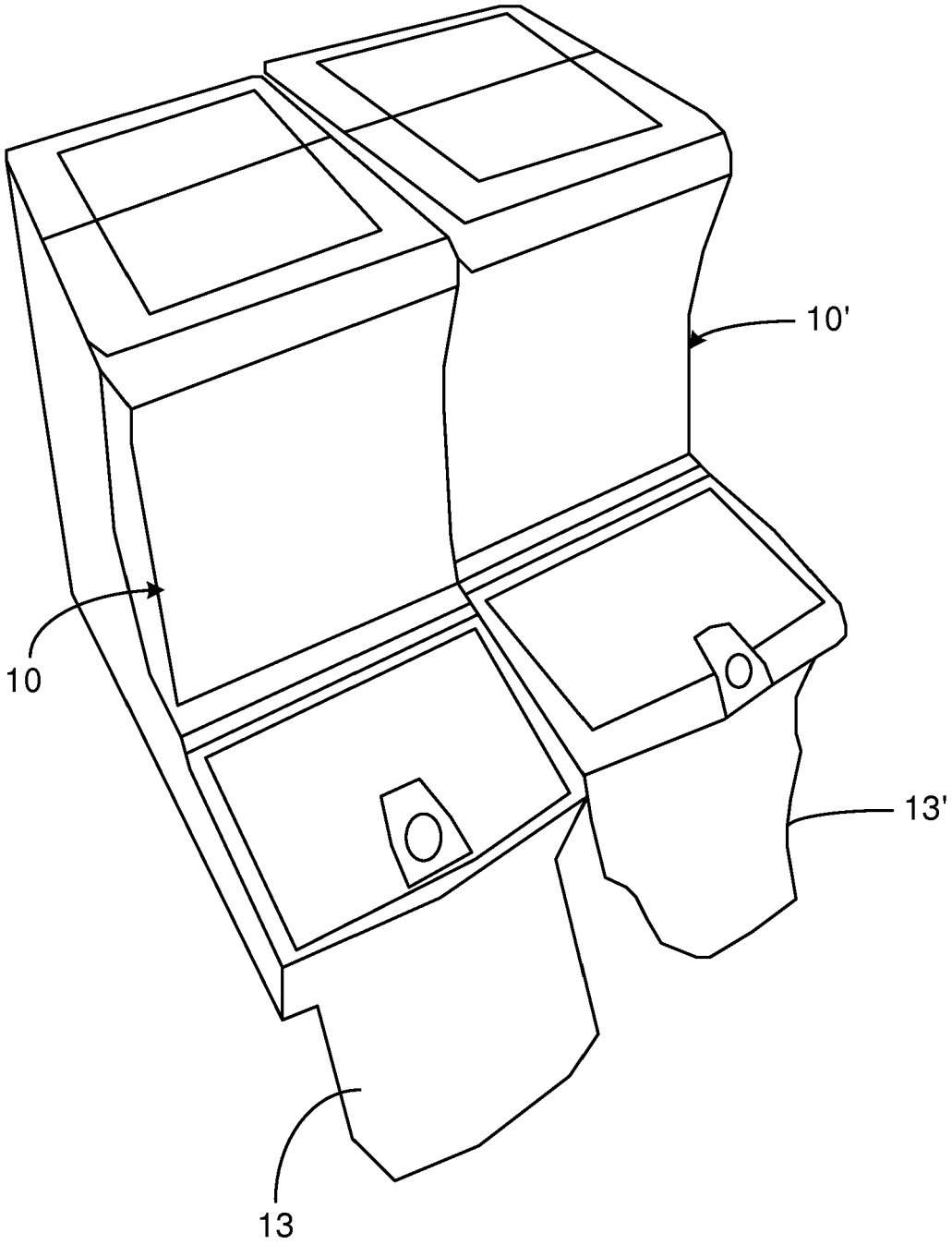

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 12 19 4720

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			A47G A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 January 2013	Kohler, Pierre

CATEGORY OF CITED DOCUMENTS

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16-01-2013

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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