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BA ME(30) Priority: **14.06.2010 SE 1050601**(71) Applicant: **HL Display AB****131 26 Nacka Strand (SE)**(72) Inventor: **Sjörberg, Märten****S-112 56 STOCKHOLM (SE)**(74) Representative: **Wennborg, Johan et al****Kransell & Wennborg KB****P.O. Box 27834****115 93 Stockholm (SE)**

(54) **Device for storing and feeding sell-by-weight loose products and for making these available for picking**

(57) Device (1) and system for storing and feeding sell-by-weight loose products and for making these available for picking. The device comprises a container (5) having side walls (8, 9, 10, 11) and at least one bottom wall (12), which together define a storage space, and having a fill opening (13) and a pick-out opening (14). The bottom wall extends from a front portion (5') of the container, which is arranged next to the pick-out opening, to a rear portion (5'') of the container, and is configured

to guide a sell-by-weight loose product of a certain minimum unit size, by gravitational feed, in the direction of the pick-out opening. The bottom wall also has continuous screen openings (22) to allow particles of a size which is less than the said minimum unit size to fall out from the storage space through the bottom wall. The device also comprises a collecting tray (30), detachably fixed to the container, for the collection of particles which have fallen out through the bottom wall (12).

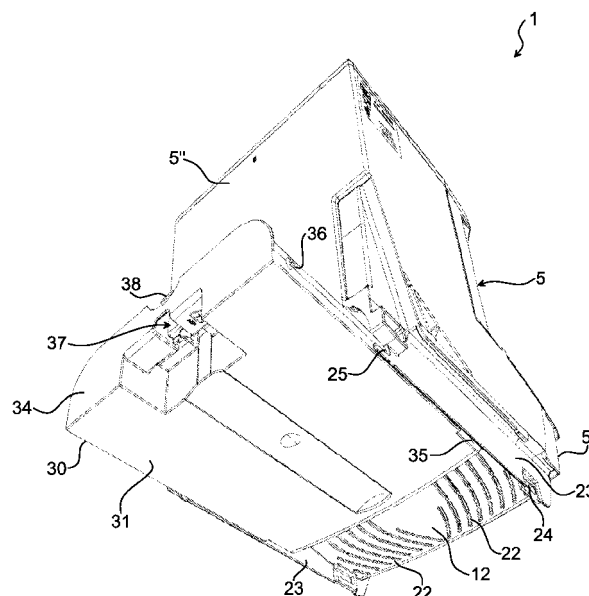


Fig. 3

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Description

Field of the invention

[0001] The invention relates to a device for storing and feeding sell-by-weight loose products and for making these available for picking, as well as to a system comprising a plurality of such devices. 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 and prior art

[0002] In the sale of loose products or commodities which are sold by weight, such as, for example, sweets, tea, grains, nuts and the like, devices which allow the customer to pick or scoop up the desired quantity of product or commodity himself are sometimes employed. The customer transfers the desired quantity from a storage container placed in the shop to a bag or the like, which is subsequently taken to the till for weighing and payment. 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 can then simply pick 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.

[0003] Previously known containers for the sale of sell-by weight loose products often comprise a front pick-out opening, which is easily accessible to a customer located in front of the container. 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 pick-out and fill openings are usually provided with closing, openable lids. In order to ensure easy access to the product through the pick-out opening, the container can comprise a bottom wall which slopes downwards in the direction of the pick-out opening. When a certain quantity of product is picked out, a corresponding quantity of the product in the container hence slides down to the space proximate to the pick-out opening, for easy access when a next pick is made.

[0004] Certain sell-by-weight loose products and which are stored and made available in this way have a tendency to dispense fine-grained fragments when individual product objects rub against one another, especial-

ly in the course of the movement which occurs during the gravitational feed. In the case of loose sweets which are sold by weight, grains of sugar applied to the individual sweets objects and smaller rubbed-off fragments of the sweets objects can, for example, come loose and mix in with the sweets objects in the container. The presence of such fine-grained fragments in the container is undesirable, since they provide a less appealing display of the product and can help to make individual product objects stick together. In order to reduce these problems, the bottom wall can be provided with continuous screen openings, which allow the smaller fragments to fall down through the screen openings, whilst the actual product objects remain in the container.

Summary of the invention

[0005] One object of the invention is to provide an improved device for storing and feeding sell-by-weight loose products and for making these available for picking.

[0006] Another object is to provide a device of this kind which allows simple and ergonomically advantageous handling for shop staff and service personnel.

[0007] A further object is to provide a device of this kind which allows simple management of unwanted particles, residual products and contaminants which have been separated from the sell-by-weight loose product.

[0008] Yet another object is to provide a device of this kind which allows hygienically advantageous handling.

[0009] And yet another object is to provide a device of this kind which allows good display of the sell-by-weight loose product.

[0010] These and other objects are acquired with a device of the type which is defined in the introductory part of Patent Claim 1 and which exhibits the specific technical distinguishing features defined in the characterizing part of the claim. The device according to the invention is intended to store and feed sell-by-weight loose products and to make these available for picking.

The device comprises a container having side walls and at least one bottom wall, which together define a storage space, and having a fill opening and a pick-out opening. The bottom wall extends from a front portion of the container, which is arranged next to the pick-out opening, to a rear portion of the container, and is configured to guide a sell-by-weight loose product of a certain minimum unit size, by gravitational feed, in the direction of the pick-out opening. The bottom wall also has continuous screen openings to allow particles of a size which is less than the said minimum unit size to fall out from the storage space through the bottom wall. According to the invention, the device comprises a collecting tray, detachably fixed to the container, for the collection of particles which have fallen out through the bottom wall.

[0011] Simple management of the separated unwanted particles which have been screened off and have fallen down through the bottom wall is thereby made possible. Since such particles are collected up by the collecting

tray beneath the container and the collecting tray is detachable from the container, it is very simple to deal with these particles by quite simply removing the collecting tray and emptying its contents into a waste bin or the like. Furthermore, the detachability enables the collecting tray to be easily washed or otherwise kept clean, which in turn contributes to good hygiene. A particular advantage is obtained when the container forms part of a group of containers intended for different product varieties. Such product varieties often generate different quantities of unwanted particles and residual products. Since each container is provided with a respective collecting tray, the invention allows the various residual products to be managed according to requirement for each product variety and container. In this way, the service and maintenance work can be simplified and optimized.

[0012] The collecting tray is expediently detachably fixed to the container by means of fixing means, which allow displacement of the collecting tray between a retracted position, in which the collecting tray covers the vertical projection of the screen openings, and an extended position. This enables the quantity of collected residual product to be easily monitored without the need to release the collecting tray from the container.

[0013] The collecting tray is expediently displaceable from the retracted position in the direction rearwards towards the extended position. The container and the collecting tray can hence be configured so that the forward-facing surface of the container, which allows the display of sell-by-weight loose products, does not need to be restricted for the fitting of handles or other members to allow manoeuvring of the collecting tray. Moreover, the risk of customers or other unauthorized persons getting hold of and extending or manipulating the collecting tray is hereby reduced.

[0014] The fixing means are expediently configured to release the collecting tray from the container when the collecting tray is displaced from the retracted position to past the extended position. This makes it possible for the collecting tray to be checked and, if so desired, removed from the container with one and the same movement.

[0015] The fixing means are expediently configured to release the collecting tray from the container when the collecting tray has been displaced from the retracted position by a distance which is less than the length of the collecting tray in the direction of displacement. A space saving is hereby made possible, since the collecting tray is able to be removed even if the distance from the container to a wall or the like situated behind it is less than the length of the collecting tray.

[0016] The device expediently comprises at least one supporting member, which projects downwards in the direction away from the bottom wall and past the collecting tray and which is arranged to allow extension and retraction of the collecting tray when the container, by means of the supporting member, rests against a substantially flat support surface. The container can be lifted from its normal placement next to a display wall or the like and

placed on a table or other flat support surface for filling, cleaning and other service. By virtue of the supporting members, it is then possible to retract, extend and remove the collecting tray without obstruction of the tray due to contact against the support surface. Handling during cleaning and other service is in this way facilitated.

[0017] The supporting member and the fixing means are expediently configured to allow connection of the collecting tray to the container by displacement of the collecting tray in the direction of the retracted position when the supporting member and the collecting tray rest against a substantially flat support surface. The connection of the collecting tray following removal is hereby facilitated, since the collecting tray is guided into the fixing means by the contact against the support surface and does not need to be lifted or fitted in by hand.

[0018] The device expediently comprises a locking member for releasably fixing the collecting tray in the retracted position. In this way, accidental extension and removal of the collecting tray is prevented.

[0019] The device expediently comprises at least one mounting bracket, by which the container can be fixed to a wall or the like, and which mounting bracket is configured to allow substantially horizontal displacement of the container between a rearwardly retracted normal position and a forwardly extended service position. The mounting bracket allows placement of the container, and especially a plurality of containers arranged close together, in a manner which is advantageous for the display of the sell-by-weight loose product or products. As a result of the horizontal displaceability of the containers, the filling of sell-by-weight loose products and also the rearwards extension and removal of the collecting tray are facilitated.

[0020] The invention also relates to a system for storing and gravitationally feeding loose products of different varieties and for making these available for picking, which system comprises a plurality of devices according to the above. Such a system allows different varieties of like sell-by-weight loose products to be advantageously stored, displayed, fed and made available for picking. The devices included in the system can expediently be placed by a wall in a matrix formation comprising vertical columns and horizontal rows of containers.

[0021] Further objects and advantages of the invention emerge from the following detailed description of the illustrative embodiment and of the patent claims.

Brief description of the figures

[0022] An illustrative embodiment of the invention is described below with reference to the appended figures, of which:

Fig. 1 is a perspective view, obliquely from the front, of a system comprising nine devices according to one embodiment of the invention;

Fig. 2 is a perspective view, obliquely from the front,

of certain parts of one of the devices shown in Fig. 1;

Fig. 3 is a perspective view, obliquely from the rear, of the device shown in Fig. 2;

Fig. 4 is an exploded view, in perspective, of a device according to the invention;

Fig. 5 is a perspective view, obliquely from the front, of certain parts of one of the devices shown in Fig. 1, when the device is placed on a flat support surface.

Detailed description of embodiments

[0023] In Fig. 1 is shown a system according to one aspect of the invention. The system comprises nine devices 1 according to one embodiment of the invention. The devices 1 are arranged in a matrix comprising three horizontal rows and three vertical columns of devices 1. The system and each device 1 are fixed to a vertical wall (not shown) by means of wall mounting brackets comprising horizontal bars 2 and fixing plates 3. The fixing plates 3 comprise hook elements 4, which are arranged for engagement with corresponding cut-outs on, for example, a panel (not shown) fixed to a shop wall. If so desired, the panel can also be free-standing, in which case the panel and the system can be placed on a shop floor to form a boundary between different shop sections.

[0024] One of the devices included in the system illustrated in Fig. 1 is illustrated in Figs. 2-5. The device comprises a container 5, a collecting tray 30, and two fixing brackets 7 (only one is shown). The device 1 and the container 5 have a front portion 5', which is intended to be facing towards an aisle or the like in which the customers are located when they are picking sell-by-weight loose products from the container 5. The device 1 and the container 5 also have a rear portion 5" opposite to the front portion 5'.

[0025] Fig. 4 shows a device according to the invention. In this device, the container 5 contains a number of walls, comprising a rear wall 8, two side walls 9, an upper front wall 10, a lower front wall 11 and a bottom wall 12. The walls 8-12 define a storage space for a sell-by-weight loose product. In the illustrated example, the device is intended for use for sell-by-weight loose sweets. The walls 8-12 also define an upper fill opening 13 and a lower pick-out opening 14. The fill opening 13 and the pick-out opening 14 are openably closed by means of a respective hinged lid 15, 16. The upper front wall 10 is arranged on a front part 17, which is fixed to the front edges of the side walls 9. The front part 17 and the front wall 10 have respective cutouts 17', 10' for the reception of a scoop holder 18. A scoop 19 for picking out the sell-by-weight loose product is fixed by means of a cord 19' fixed to the container and can be placed in the scoop holder 18 when the pick-out lid 16 is shut. The container shown in Fig. 4 differs from the container shown in Fig. 2 by dint of a partition 20 arranged in the container 5. The partition 20

divides the storage space into two laterally disposed sub-chambers. Two different varieties of sell-by-weight loose products can hence be stored in one and the same container 5. The container 5 is expediently made of a transparent polymer material, which allows display of the sell-by-weight loose product through the container walls. Between the front wall 10 and the front face of the front part 17 is formed a space which allows the reception of an information sheet (not shown) which is visible through the front part 17.

[0026] The container 5 is fixed to two (only one is shown) fixing brackets 7 of the pull-out type. For this purpose, the container 5 is provided with laterally projecting fixing pins 21. The fixing brackets 7 comprise hooks 7', by which they can be suspended from the horizontal bars 2 of the wall mounting brackets.

[0027] The bottom wall 12 of the container 5 slopes downwards in the direction forwards towards the lower front wall 11. The gravitational feed of sell-by-weight loose products in the storage space is hereby achieved, so that the individual product units, when picked out, are guided forwards towards the space directly below the pick-out opening 14. In this way, simple accessing of the sell-by-weight loose product through the pick-out opening is achieved. The bottom wall further has a number of screen openings, which allow small unwanted particles, such as rubbed-off product fragments, dust and contaminants, to be separated from the sell-by-weight loose product and to fall down through the screen openings 22. The screen openings 22 are relatively narrow, so that individual sell-by-weight loose product units having a dimension which is greater than the width of the screen openings cannot pass through the screen openings.

[0028] The container 5 comprises two supporting members 23 in the form of longitudinal vertical flanges, which supporting members project downwards past the bottom wall.

[0029] The device further comprises a collecting tray 30 for collecting the fragments, particles and contaminants which have fallen down through the screen openings 22 in the bottom wall 12 of the container 5. The collecting tray 30 comprises an unbroken bottom wall 31, side walls 32, a front wall 33 and a rear wall 34. The collecting trough 30 is detachably fixed to the container 5. For this purpose, the supporting members 23 comprise on the container 5 front 24 and rear 25 fixing means. The front 24 and rear 25 fixing means are constituted by rearwardly open, horizontal, continuous grooves, which are recessed in the supporting members 23. The collecting tray 30 has corresponding front 35 and rear 36 fixing means in the form of laterally projecting pins. The collecting tray 30 also comprises a locking member 37 in the form of an elastically movable element comprising a hook (not shown) and a grip part 38.

[0030] In Figs. 1 and 2, the device according to the invention is shown when the collecting tray 30 is in its retracted normal position. The laterally projecting pins 35, 36 of the collecting tray are then accommodated in

slots 24, 25 of the container 5 and are located at the respective front end of the slots 24, 25. The hook (not shown) of the locking member 37 is engaged with a corresponding engagement member (not shown), which is arranged in the rear wall 8 of the container 5. The collecting tray 30 is in this way detachably fixed to the container 5.

[0031] When the container is to undergo service, such as for filling and/or cleaning, the container 5 is pulled out into the extended position assumed by one of the containers 5 in Fig. 1. The container can thereafter be lifted off the mounting brackets 7 and placed on a substantially flat support surface. In Fig. 5, this is illustrated by the placement of the container 5 on the table top A. The height and mutual vertical position of the supporting members 23 and of the collecting tray 30 are adapted so that the lower edge surfaces of both supporting members 23 and the lower bottom surface of the collecting tray 30 rest on the table top A. The collecting tray 30 can now be pulled rearwards by first releasing the hook of the locking member 39 from the engagement member on the rear wall 8 of the container 5 by means of the grip part 38. By pulling the collecting tray 30 rearwards by a distance less than the length of the slots 24, 25, the collecting tray assumes an extended position. By continued pulling past this extended position, the collecting tray 30 is released from the container 5 by the withdrawal of the pins 35, 36 from the slots 24, 25. This can be utilized, for example, in the removal of the collecting tray 30 when the container is freely suspended and the collecting tray 30 can be angled down below the container 5. When the container is placed on a flat support surface, as is illustrated in Fig. 5, the collecting tray is pulled out fully to the point where the front wall 33 of its collecting tray 30 has passed the rear edges of the supporting members 23. The collecting tray 30 can thereafter be lifted off for emptying of residual fragments and for cleaning. When the collecting tray 30 is to be refixed to the container 5, the configuration of the height of the supporting members 23 and that of the collecting tray 30 means that the collecting tray, when bearing against the table top A, is automatically guided in, so that the fixing means 24, 25, 35, 36 enter into cooperative engagement. Hence the collecting tray 30 is not required to be guided in manually, which makes handling considerably easier.

[0032] With the device according to the invention, an effective collection of product fragments and contaminants which have been separated from the sell-by-weight loose product in a container is thus made possible. The material collected in the collecting tray can be easily emptied into a waste container or the like and the collecting tray can be cleaned.

[0033] The invention also allows product fragments from each container to be collected and emptied separately. This signifies an advantage, since different varieties of products generate different quantities of product fragments, the frequency with which the product fragments need to be emptied varies from product variety to

product variety. The separate collection additionally allows separate recovery without mixing of product fragments from different product varieties, should this be desirable. With the invention, handling of the containers during filling, emptying and cleaning is also enabled in a simple and ergonomically advantageous manner.

[0034] Illustrative embodiments of the invention have been described above. However, the invention is not limited to the above-given description, but can be freely varied within the scope of the following patent claims.

Claims

1. Device (1) for storing and feeding sell-by-weight loose products and for making these available for picking, which device comprises a container (5) having side walls (8, 9, 10, 11) and at least one bottom wall (12), which together define a storage space, and having a fill opening (13) and a pick-out opening (14), which bottom wall extends from a front portion (5') of the container, which is arranged next to the pick-out opening, to a rear portion (5'') of the container, and is configured to guide a sell-by-weight loose product of a certain minimum unit size, by gravitational feed, in the direction of the pick-out opening, and which bottom wall has continuous screen openings (22) to allow particles of a size which is less than the said minimum unit size to fall out from the storage space through the bottom wall, **characterized by** a collecting tray (30), detachably fixed to the container, for the collection of particles which have fallen out through the bottom wall (12).
2. Device according to Claim 1, in which the collecting tray (30) is detachably fixed to the container (5) by means of fixing means (24, 25, 35, 36), which allow displacement of the collecting tray between a retracted position, in which the collecting tray covers the vertical projection of the screen openings, and an extended position.
3. Device according to Claim 2, in which the collecting tray (30) is displaceable from the retracted position in the direction rearwards towards the extended position.
4. Device according to Claim 2 or 3, in which the fixing means (24, 25, 35, 36) are configured to release the collecting tray (30) from the container (5) when the collecting tray is displaced from the retracted position to past the extended position.
5. Device according to any one of Claims 2-4, in which the fixing means (24, 25, 35, 36) are configured to release the collecting tray (30) from the container (5) when the collecting tray has been displaced from the retracted position by a distance which is less than

the length of the collecting tray in the direction of displacement.

6. Device according to any one of Claims 2-5, comprising at least one supporting member (23), which projects downwards in the direction away from the bottom wall (12) and along the collecting tray (30) and which is arranged to allow extension and retraction of the collecting tray when the container (5), by means of the supporting member, rests against a substantially flat support surface (A). 5
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7. Device according to Claim 6, in which the supporting member (23) and the fixing means (24, 25, 35, 36) are configured to allow connection of the collecting tray (30) to the container (5) by displacement of the collecting tray in the direction of the retracted position when the supporting member and the collecting tray rest against a substantially flat support surface. 15
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8. Device according to any one of Claims 1-7, comprising a locking member (37) for releasably fixing the collecting tray (30) in the retracted position.

9. Device according to any one of Claims 1-8, comprising at least one mounting bracket (7), by which the container (5) can be fixed to a wall or the like, and which mounting bracket is configured to allow substantially horizontal displacement of the container between a rearwardly retracted normal position and a forwardly extended service position. 25
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10. System for storing and gravitationally feeding loose products of different varieties and for making these available for picking, comprising a plurality of devices (1) according to any one of Claims 1-9. 35

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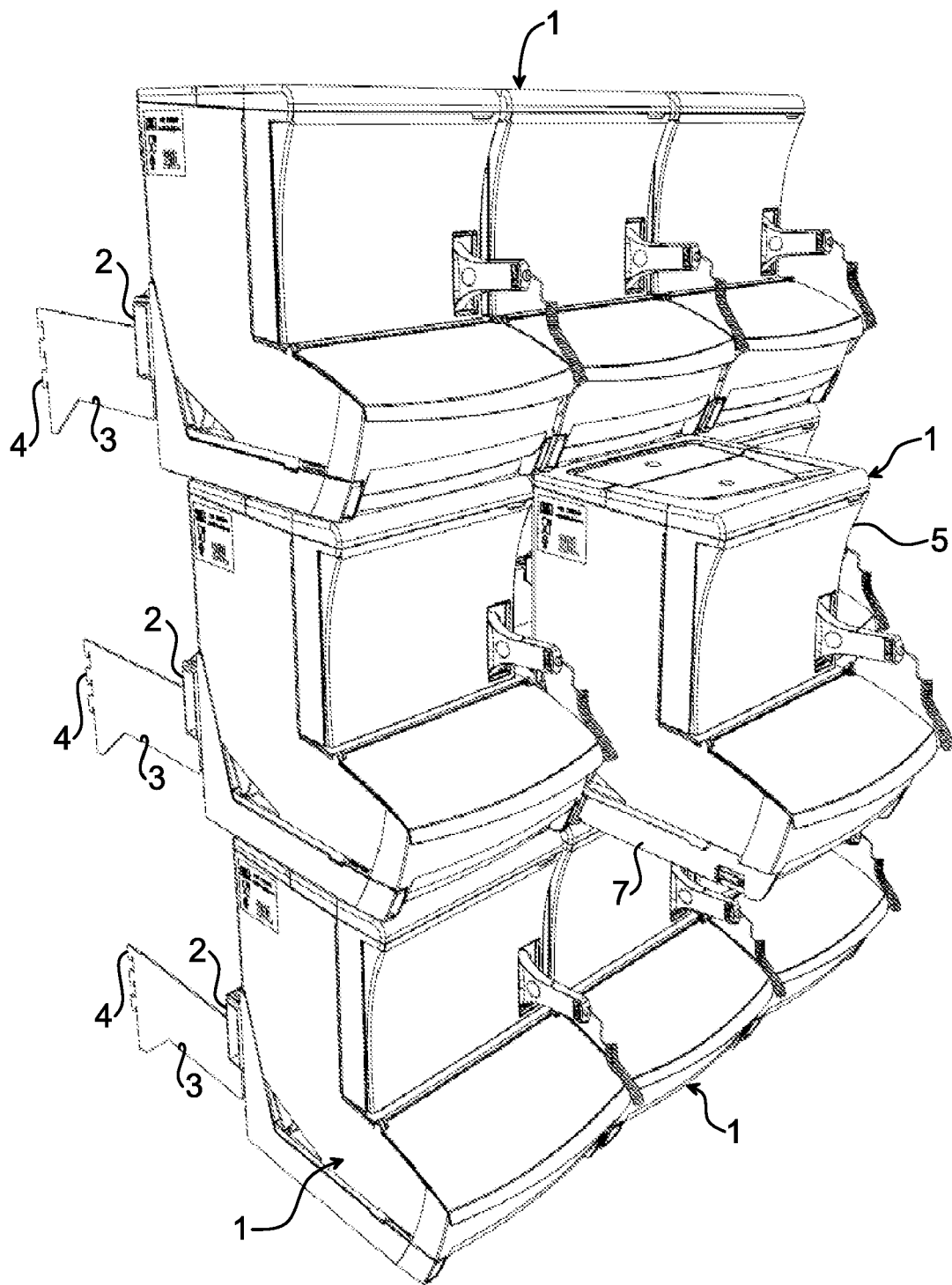


Fig. 1

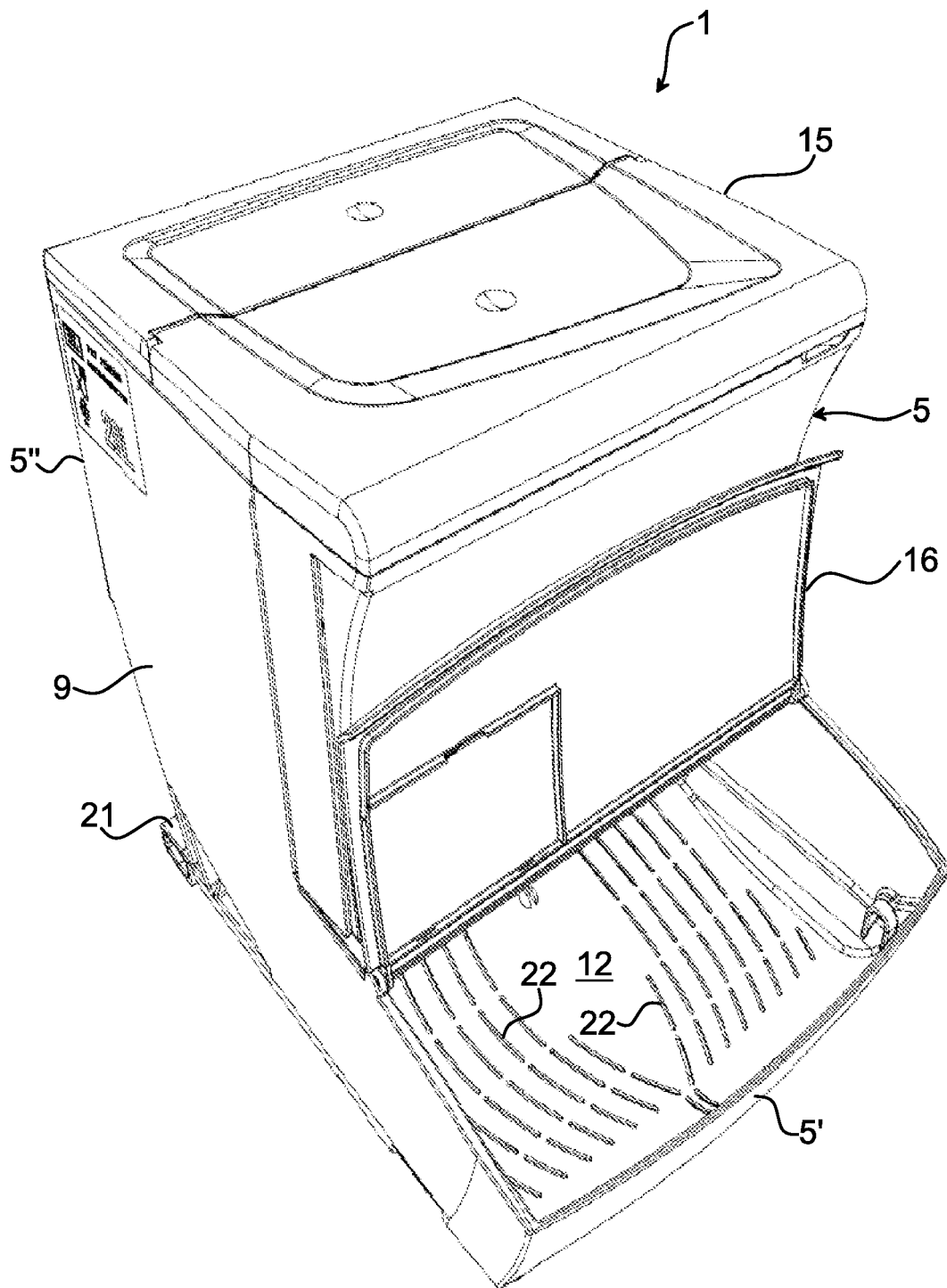


Fig. 2

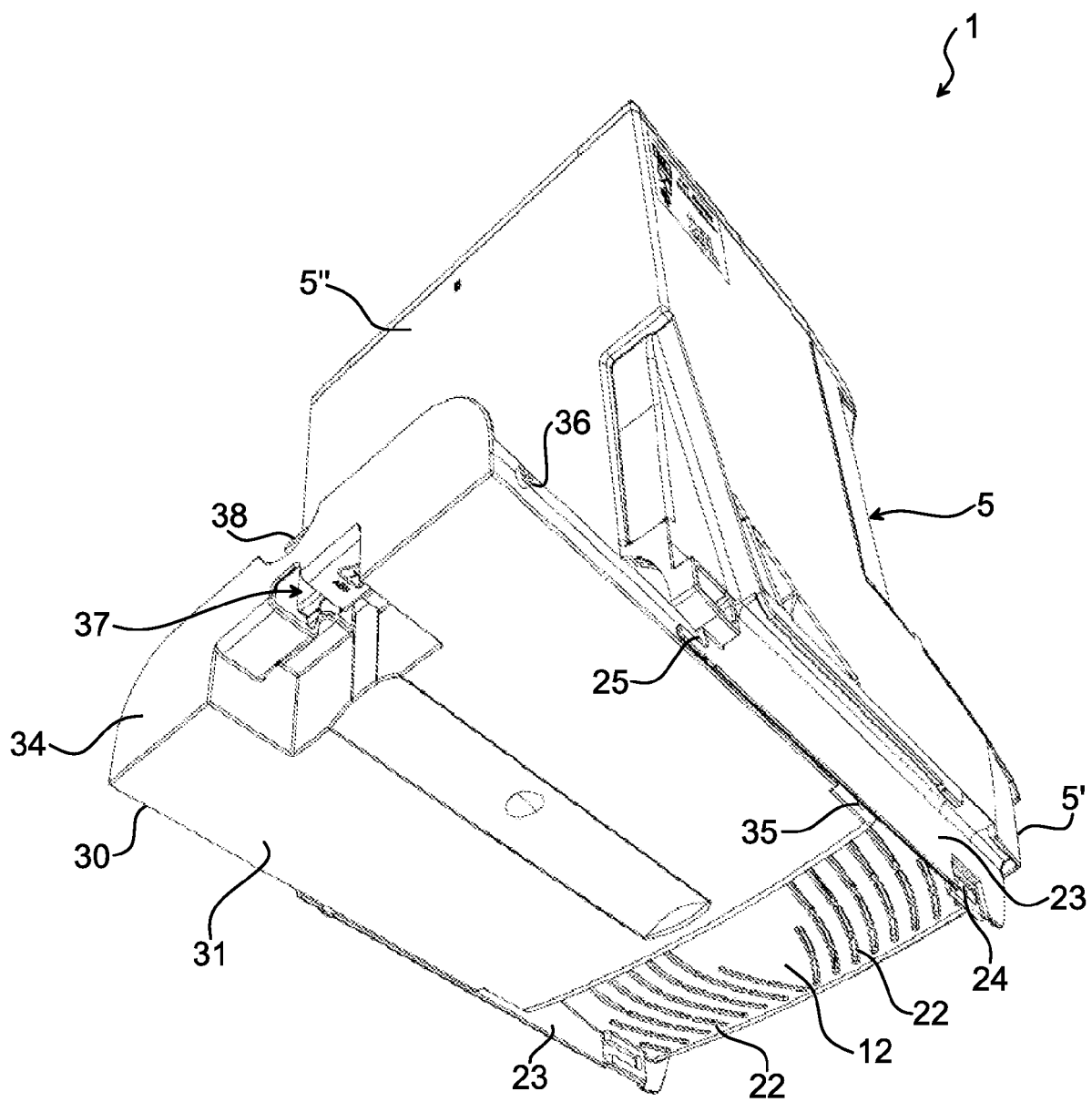


Fig. 3

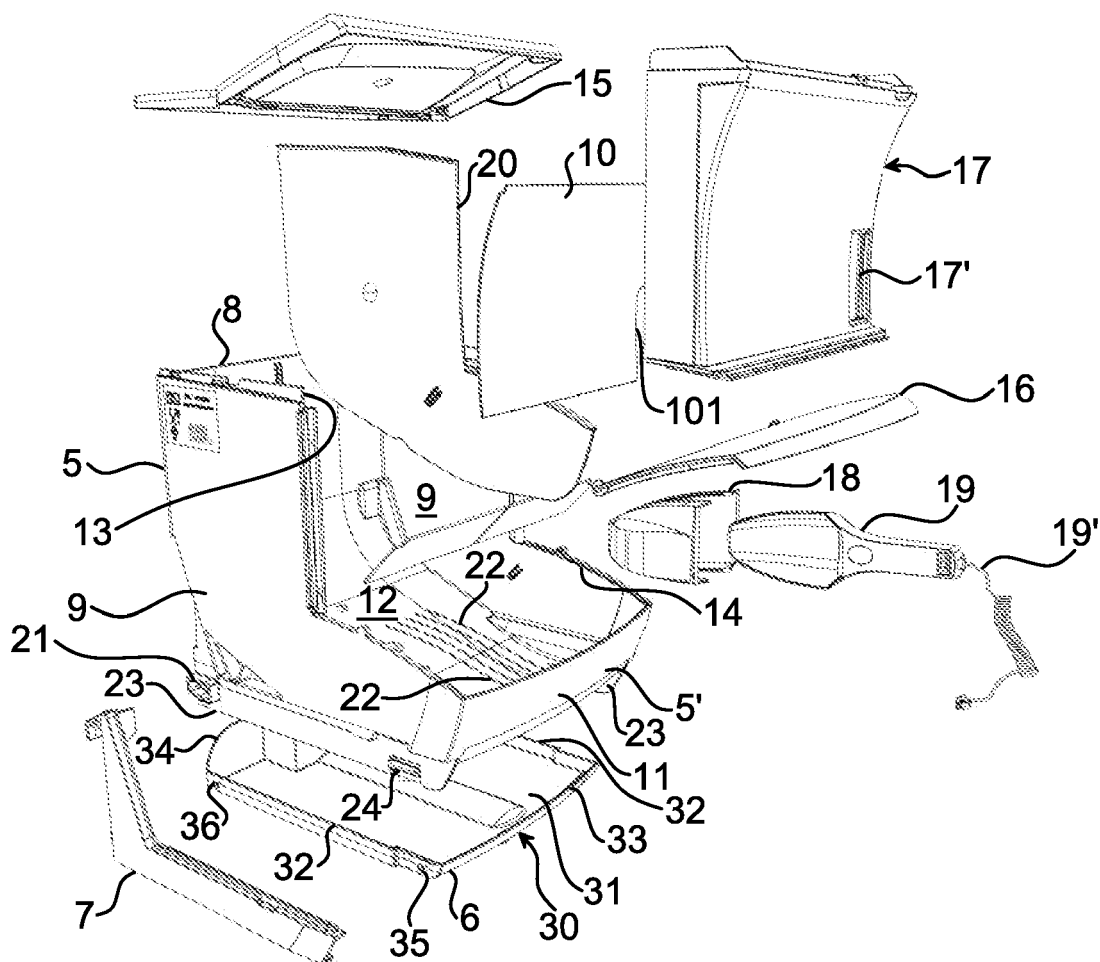


Fig. 4

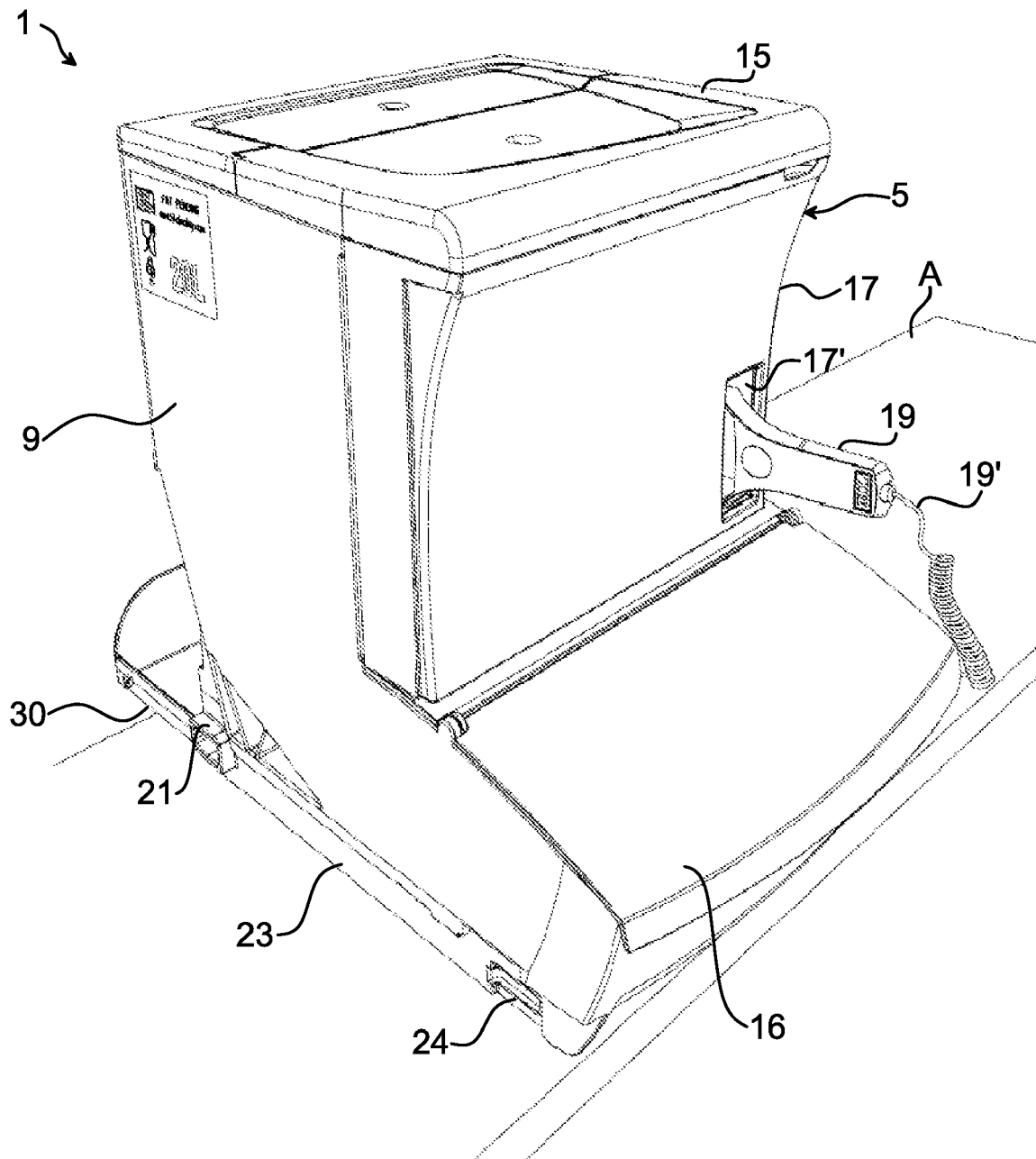


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 02/096245 A1 (OK KARL FAZER AB [FI]; LANDIN LORENTZEN LENA [SE]) 5 December 2002 (2002-12-05) * the whole document *	1-10	INV. A47F1/02
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Place of search		Date of completion of the search	Examiner
Munich		14 September 2011	Cardan, Cosmin
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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