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(54) **BULK BIN DEVICE**

(57) Bulk bin device for storing and feeding sell-by-weight loose products, which device comprises a container (10) for storing said products and for feeding the products towards a front opening (30) of the container and a first lid (32). The first lid is hingedly connected to the container (10) and arranged pivotal about a horizontal pivotal axis (PA) between a forward position at which the first lid (32) closes said front opening (30) and a rear po-

sition at which the front opening (30) is open for allowing pick-out of products. The centre of gravity (CG) of the first lid (32) is, in the first lid's rear position, positioned behind a vertical line (VL) through the pivotal axis (PA). The device further comprises biasing means (40, 42, 42a) arranged for urging the first lid (32) from the rear position towards the front position.

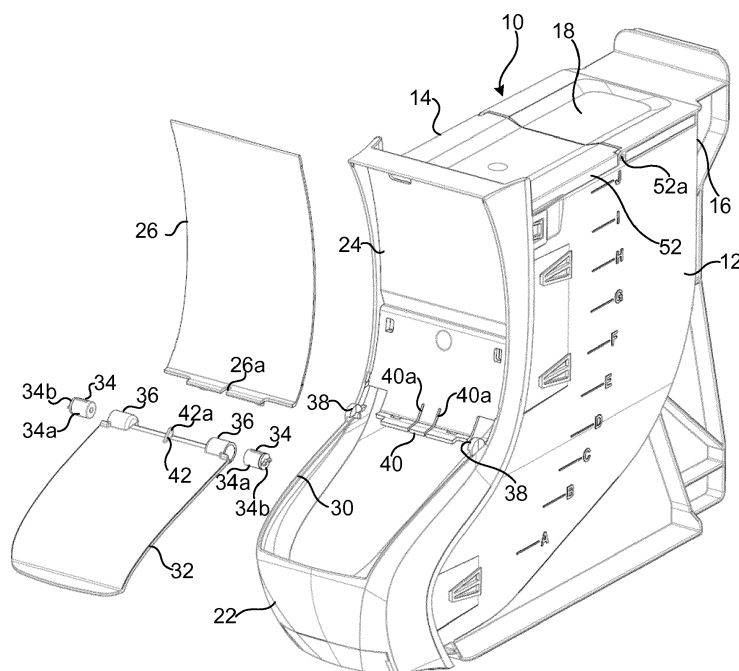


Fig. 1

## Description

### TECHNICAL FIELD

[0001] The present disclosure relates to the field of storing and feeding sell-by-weight loose products and for making these available for picking. More particularly the disclosure concerns a bulk bin device for storing and feeding such products. The bulk bin device 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, 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, often referred to as a bulk bin, placed in the shop to a bag or the like, which is subsequently brought 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 bulk bins. 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 design of the bulk bins, 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 bulk bins 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 bulk bin may comprise a bottom feeding 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] EP 2 394 535 A1 discloses a device for storing and feeding sell-by-weight loose products. The device

comprises a container having a front pick-out opening and a rear fill-opening. The pick-out opening is closed by a openable lid which is hingedly fixed to opposing side walls of the container.

### SUMMARY

[0005] An object of the present disclosure is to provide an enhanced bulk bin device for storing and feeding loose sell-by-weight products.

[0006] Another object is to provide such a bulk bin device which facilitates the picking-out of products.

[0007] A further object is to provide such a bulk bin which reduces the risk of contamination of the products.

[0008] Yet another object is to provide such a bulk bin device which is simple in construction with a comparatively low number of constituent components.

[0009] According to a first aspect, the present disclosure makes available a bulk bin device as set out in the appended claim 1. The bulk bin device is intended for storing and feeding sell-by-weight loose products. The bulk bin device comprises a container for storing said products and for feeding the products towards a front opening of the container and a first lid which is hingedly connected to the container and arranged pivotal about a horizontal pivotal axis between a forward position at which the first lid closes said front opening and a rear position at which the front opening is open for allowing pick-out of products. The centre of gravity of the first lid is, in the first lid's rear position, positioned behind a vertical line through the pivotal axis. The device further comprises biasing means arranged for urging the first lid from the rear position towards the front position.

[0010] The bulk bin device comprising a so arranged first lid allows for that the first lid may be opened to a fully opened rear position where the lid is completely cleared from the vertical projection of the front opening. This greatly facilitates picking-out of products since the first lid then does not hinder the customer from viewing the products through the opening or from accessing the products by means of a hand, a scoop, a cup, a jug or the like. At the same time, the biasing means assures that the lid is automatically fully closed when the picking-out is completed and the customer lets go of the first lid. Such an automatic closure of the first lid eliminates the risk that the first lid is left open under longer times, which would otherwise expose the products to the ambient atmosphere thereby increasing the risk of contamination by foreign particles.

[0011] The biasing means is preferably arranged to urge the first lid forwardly from the rear position to a rotational position at which the centre of gravity of the first lid is in front of a vertical line through the pivotal axis. By this means the stroke of the biasing means may be kept comparatively short. It suffices that the biasing means brings the lid to a position where the gravity acting on the first lid strives to complete the closure of the first lid to the fully closed front position. Hence the biasing means

may be designed comparatively small and non-expensive.

**[0012]** The biasing means may comprise a resilient tongue. This has proven to be a reliable and yet cost-effective way of realizing the biasing means.

**[0013]** The resilient tongue may be formed in an upper front wall of the container. This allows for that the tongue may be formed as an integral part of the container, facilitating manufacturing and reducing the total number of components.

**[0014]** The tongue may be arranged to make contact with a contact surface arranged on the first lid which contact surface is arranged radially offset the pivotal axis. This allows for a simple means for realizing the biasing means. By choosing the length and resiliency of the tongue and the radial offset distance of the contact surface the torque by which the tongue urges the lid forwardly may readily be adapted to suitable value.

**[0015]** The contact surface may be arranged on a protruding flange of the first lid. Hereby, the contact surface is formed as an integral part of the first lid, which further facilitates manufacturing and reduces the total number of components. In combination with a tongue which forms an integral part of the container this allows for that the entire biasing means may be accomplished completely without increasing the total number of components of the bulk bin device.

**[0016]** The first lid may be hingedly connected to the container by means of at least one damping hinge. By this means it is possible increase the closing time of the first lid, such that the customer gets sufficient time to remove his/her hand, the scoop or the like without making contact with the first lid. Such soft closing of the first lid also reduces the noise, when the first lid reaches the fully closed front position.

**[0017]** The damping hinge may be an oil damped hinge. Such damping hinges have proven to be reliable and a cost-effective means of providing damped closure of bulk bin pick-out opening lids.

**[0018]** The first lid's rear position may be defined by a portion of the first lid making contact with an upper front wall of the container. Hereby, all components necessary to stop the first lid, during opening, at the correct fully opened rear position may be formed as integral parts of the container and the lid.

**[0019]** The tongue may be formed in a first upper front wall and the first lid's rear position may be defined by a portion of the first lid making contact with a second upper front wall of the container, which is arranged in front of said first upper front wall. Such an arrangement of a first upper front wall and a second upper front wall allows for that a sheet-formed poster, label or the like exposing information about the products may readily be positioned and held in place between the first and second upper front walls.

**[0020]** The second upper front wall may further be arranged to cover the slits in the first upper front wall which slits define the tongue. Hereby, the risk of foreign material

to enter the container through said slits is reduced.

**[0021]** The container may exhibit a rear opening for filling of products which rear opening is arranged behind and above the front opening. By this means the container may readily be filled with new products before the container has been completely emptied by picking out through the front opening. This also ensures that the products first filled to the container are first pick-out.

**[0022]** The rear opening may be closable by means of a second lid. This further reduces the risk of contamination of the products in the container.

**[0023]** The first lid's rear position may be arranged at an opening angle of the first lid between 95° and 165°, preferably between 115° and 135° from the front position. These opening angle intervals have proven to be especially advantageous for facilitating picking-out of the product while still providing sufficiently large storage space inside the container.

**[0024]** The container may comprise a forwardly sloping bottom wall arranged to feed the product towards the front opening. Such feeding further facilitates picking-out and is an efficient means for allowing the first fill, first pick-out principle.

**[0025]** The bottom wall may be provided with through holes for sifting dust and other small particles from the products. This allows for keeping the picked-out products clean and appealing to the customer.

**[0026]** Further object and advantages of the present disclosure will be apparent from the following detailed description and the appended claims.

**[0027]** 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

**[0028]** Aspects and embodiments are now described, by way of example, with reference to the accompanying drawings, in which:

Fig 1 is a partly exploded perspective view of a bulk bin device according to the present disclosure.

Fig. 2 is a perspective non-exploded view, with one part removed of the bulk bin device shown in fig. 1.

Fig 3a-b are central vertical sections of the bulk bin device shown in fig. 1 illustrating different stages of the opening of a first lid of the bulk bin device shown in fig. 1.

Fig. 4 is a perspective view of the bulk bin device shown in fig. 1 with all parts mounted.

## DETAILED DESCRIPTION

**[0029]** The aspects of the present disclosure will now be described more fully hereinafter with reference to the accompanying drawings, in which certain embodiments of the invention are shown.

**[0030]** These aspects may, however, be embodied in many different forms and should not be construed as limiting; rather, these embodiments are provided by way of example so that this disclosure will be thorough and complete, and to fully convey the scope of all aspects of invention to those skilled in the art. Like numbers refer to like elements throughout the description.

**[0031]** A bulk bin device according to one embodiment is shown in figs. 1 and 2. In the shown example the bulk bin device constitutes as so called scoop bin at which the products are intended to be picked-out by means of a scoop or a similar tool. The bulk bin device comprises a container 10 having opposing side walls 12, 14, a rear wall 16, a top wall 18 and a bottom wall 20. A lower front wall 22 extends upwardly from the front end of the bottom wall 20. A first upper front wall 24 extends between front edges of the side walls' 12, 14 respective upper portions. A second upper front wall 26 is removably attached to the container 10 just in front of the first upper front wall 24. The second upper front wall 26 essentially covers the first upper front wall 24 and is made of a transparent polymer material. By this means a sheet-formed poster or label (not shown) may be inserted and held in place between the first 24 and second 26 upper front walls. The poster or label may thus present information to a customer positioned in front of the bulk bin device.

**[0032]** A front opening 30 for picking-out products from the bulk bin device is arranged between the lower front wall 22 and the second upper front wall 26. The front opening 30 is defined by the upper edges of the lower front wall 22, the respective upper edges of lower portions of the side walls 12, 14 and a lower edge of the second upper front wall 26. As readily seen in the drawings, the lower front wall 22 is arranged in front of and below the first 24 and second 26 upper front walls.

**[0033]** A first lid 32 is hingedly connected to the container 10 by means of two damping hinges 34. Each hinge 34 comprises an outer cylindrical part 34a which is fixed to a respective first seat 36 arranged at the first lid 32. An inner part (not visible) with a disc-shaped end flange 34b is concentrically and rotationally received in the outer part 34a. The flange portion 34b of the inner part is fixed to a second seat 38 arranged at a respective side wall 12, 14 of the container 10. A silicone oil is arranged between the outer 34a and inner part. Upon relative rotation, the oil creates friction between the outer and inner parts, thereby providing damping or breaking to the relative rotation.

**[0034]** As best seen in figs 3a-c, the first lid 32 is pivotal

about a horizontal pivotal axis PA, defined by the hinges 34, between a forward position shown in fig 3a at which the first lid closes the front opening 30 and a rearward position shown in fig 3c at which the front opening is fully open. In the fully open rearward position, the centre of gravity CG of the first lid 32 has passed behind a vertical line VL which extends through the pivotal axis PA of the first lid 32. Thus, when the first lid 32 is in the fully open rearward position the gravity acting on the first lid cannot urge the first lid 32 towards the forward closed position.

**[0035]** For accomplishing automatic closure of the first lid 32, when the first lid is in the rearward position and the consumer lets go of the first lid, the bulk bin device comprises biasing means 40, 42, 42a arranged to urge the first lid 32 from the rearward position towards the forward position. These biasing means comprises a resilient tongue 40 which is formed centrally in the lower portion of the first upper front wall 24. The tongue is defined by two mutually parallel longitudinal slits 40a which extend rearwards and upwards from the lower edge of the first upper front wall 24. The biasing means further comprises a fin shaped flange 42 arranged centrally at the rear portion of the first lid 32, such that it extends radially from the pivotal axis PA of the first lid 32. The flange 42 exhibits, at its free end a convex contact surface 42a which is arranged to cooperate with the free end of the tongue 40.

**[0036]** Opening of the first lid 32 is illustrated in figs 3a-c. In the fully closed forward position of the first lid 32, gravity is acting on the first lid, such that the front and side edges of the lid rest on the upper edges of the lower front wall 22 and the front portions of the side walls 13, 14, which upper edges surrounds the front opening 30. In this position, the first lid 32 fully covers the front opening such that the front opening 30 hereby is fully closed.

**[0037]** For opening the front opening 30 for picking-out products, the customer simply grips the front edge of the first lid 32 and pivots it around the pivotal axis PA in the clock-wise direction as seen in the figures. When the first lid has reached the position shown in fig. 3b the contact surface 42a of the flange 42 makes contact with the upper surface of the tongue 40, in proximity to the free end of the tongue. During continued clock-wise pivoting of the first lid 32, the radially protruding flange 42 with contact surface 42a will act as a lever and press the free end of the tongue 40 downwards under resilient deformation of the tongue. By this means, the tongue 40 becomes preloaded and strives to return to its unloaded position and thereby to return the flange 42 and the first lid 32 to the position shown in fig. 3b. However, further continued pivoting of the first lid 32 in the clock-wise direction may continue until the first lid 32 reaches the position shown in fig. 3c, where a front and here an upper portion of the lid makes contact with the second upper wall 26. At this moment the first lid 32 has reached its rearward fully open position. At this position the centre of gravity CG of the first lid is positioned behind a vertical line through the pivotal axis PA, such that the gravity acting on the first

lid 32 cannot bring the first lid towards the forward closed position. In the shown example the opening angle between the front position and the rear position of the first lid 32 is approx. 125°.

**[0038]** However, when the customer now lets go of the first lid 32, the resilient force of the now fully preloaded tongue 40 will act on the contact surface 42a to create a torque on the flange 42 and the first lid 32 in the anti-clockwise direction. Thereby, the tongue will force the first lid 32 to rotate in the anti-clockwise direction until it again reaches the position shown in fig. 2b, where the tongue has been relieved. At this position the centre of gravity CG is again in front of the vertical line VL through the pivotal axis PA such that the gravity acting on the first lid will cause continued rotation to the fully closed forward position shown in fig 2a.

**[0039]** Hence, the biasing means 40, 42, 42a allows for that the first lid 32 may be fully opened to a position where the centre of gravity CG has passed behind a vertical line VL through the pivotal axis PA in order to fully expose the products while still achieving the important automatic closure of the first lid 32.

**[0040]** As best seen in figs. 1 and 4, the second upper front wall 26 covers, when mounted, the slits 40a formed in the first upper front wall 24 for defining the resilient tongue. By this means it is assured that foreign matter does not penetrate into the bulk bin device when the first lid is closed. It may also be noted that the second upper front wall 26 exhibits a notch 26a extending centrally from the lower edge of the second upper front wall 26. This notch allows that the first lid 32 with its flange 42 may be rotated without the flange 42 being hindered by the lower portion of the second upper front wall 26.

**[0041]** The bulk bin device further comprises a rear opening 50 which is arranged in the top wall 18 of the container. A second lid 52 is connected to the top wall 18 by means of hinges 52a. The rear opening 50 is, after opening of the second lid 52, used for filling products into the container. Products filled into the container is stored therein and feed by gravity along the forwardly sloping bottom wall 20 towards the lower front wall 22 which is arranged in proximity to the front opening 30. By this means products which has first been filled into the container will also be picket-out first. During forward feeding of the products, dust and other smaller particles are separated from the products by sifting through openings 20a arranged in the bottom wall 20.

**[0042]** It is readily understood that the biasing means may be formed in other ways than by a resilient tongue and flange combination. The biasing means may for example comprise a separate spring, such as a leaf spring or a coil spring which is arranged at the first and/or second upper front wall and which makes contact with the first lid, at least when it is in the fully opened rearward position, for urging the first lid towards the forward position. Alternatively, the biasing means may comprise at least one torsional spring which is arranged e.g. in or about at least one of the first lid's hinges. Such a torsional spring may

be arranged to act between two parts of the hinge which are rotational relative to each other, for urging the first lid towards the forward position at least when the lid is approaching the rearward fully open position.

**[0043]** Thus, while various aspects and embodiments have been disclosed herein, other aspects and embodiments will be apparent to those skilled in the art. The various aspects and embodiments disclosed herein are for purposes of illustration and are not intended to be limiting, with the true scope and spirit being indicated by the following claims.

## Claims

1. Bulk bin device for storing and feeding sell-by-weight loose products, which device comprises a container (10) for storing said products and for feeding the products towards a front opening (30) of the container and a first lid (32) which is hingedly connected to the container (10) and arranged pivotal about a horizontal pivotal axis (PA) between a forward position at which the first lid (32) closes said front opening (30) and a rear position at which the front opening (30) is open for allowing pick-out of products, **characterized in that**, the centre of gravity (CG) of the first lid (32), in the first lid's rear position, is positioned behind a vertical line (VL) through the pivotal axis (PA) **and in that** the device further comprises biasing means (40, 42, 42a) arranged for urging the first lid (32) from the rear position towards the front position.
2. Bulk bin device according to claim 1, wherein the biasing means (40, 42, 42a) is arranged to urge the first lid (32) forwardly from the rear position to a rotational position at which the centre of gravity (CG) of the first lid (32) is in front of a vertical line (VL) through the pivotal axis (PA).
3. Bulk bin device according to claim 1, wherein the biasing means (40, 42, 42a) comprises a resilient tongue (40).
4. Bulk bin device according to claim 2, wherein the resilient tongue (40) is formed in an upper front wall (24) of the container (10).
5. Bulk bin according to claim 2 or 3, wherein the tongue (40) is arranged to make contact with a contact surface (42a) arranged on the first lid (32) which contact surface (42a) is arranged radially offset the pivotal axis (PA).
6. Bulk bin device according to claim 4, wherein the contact surface (42a) is arranged on a protruding flange (42) of the first lid (32).
7. Bulk bin device according to any of claims 1-5,

wherein the first lid (32) is hingedly connected to the container (10) by means of at least one damping hinge (34).

8. Bulk bin device according to claim 6, wherein the at least one damping hinge (34) is an oil damped hinge. 5
9. Bulk bin device according to any of claims 1-7, wherein the first lid's (32) rear position is defined by a portion of the first lid (32) making contact with an upper front wall (26) of the container (10). 10
10. Bulk bin device according to claim 8, wherein the tongue (40) is formed in a first upper front wall (24) and wherein first lid's (32) rear position is defined by a portion of the first lid making contact with a second upper front wall (26) of the container, which is arranged in front of said first upper front wall (24). 15
11. Bulk bin device according to any of claims 1-9, wherein the container (10) exhibits a rear opening (50) for filling of products which rear opening (50) is arranged behind and above the front opening (30). 20
12. Bulk bin device according to claim 10, wherein the rear opening (50) is closable by means of a second lid (52). 25
13. Bulk bin device according to any of claims 1-11, wherein the first lid's (32) rear position is arranged at an opening angle of the first lid between 95° and 165°, preferably between 115° and 135° from the front position. 30
14. Bulk bin device according to any of claims 1-13, wherein the container (10) comprises a forwardly sloping bottom wall (20) arranged to feed the product towards the front opening (30). 35
15. Bulk bin device according to claim 14, wherein the bottom wall (20) is provided with through holes (20a) for sifting dust and other small particles from the products. 40

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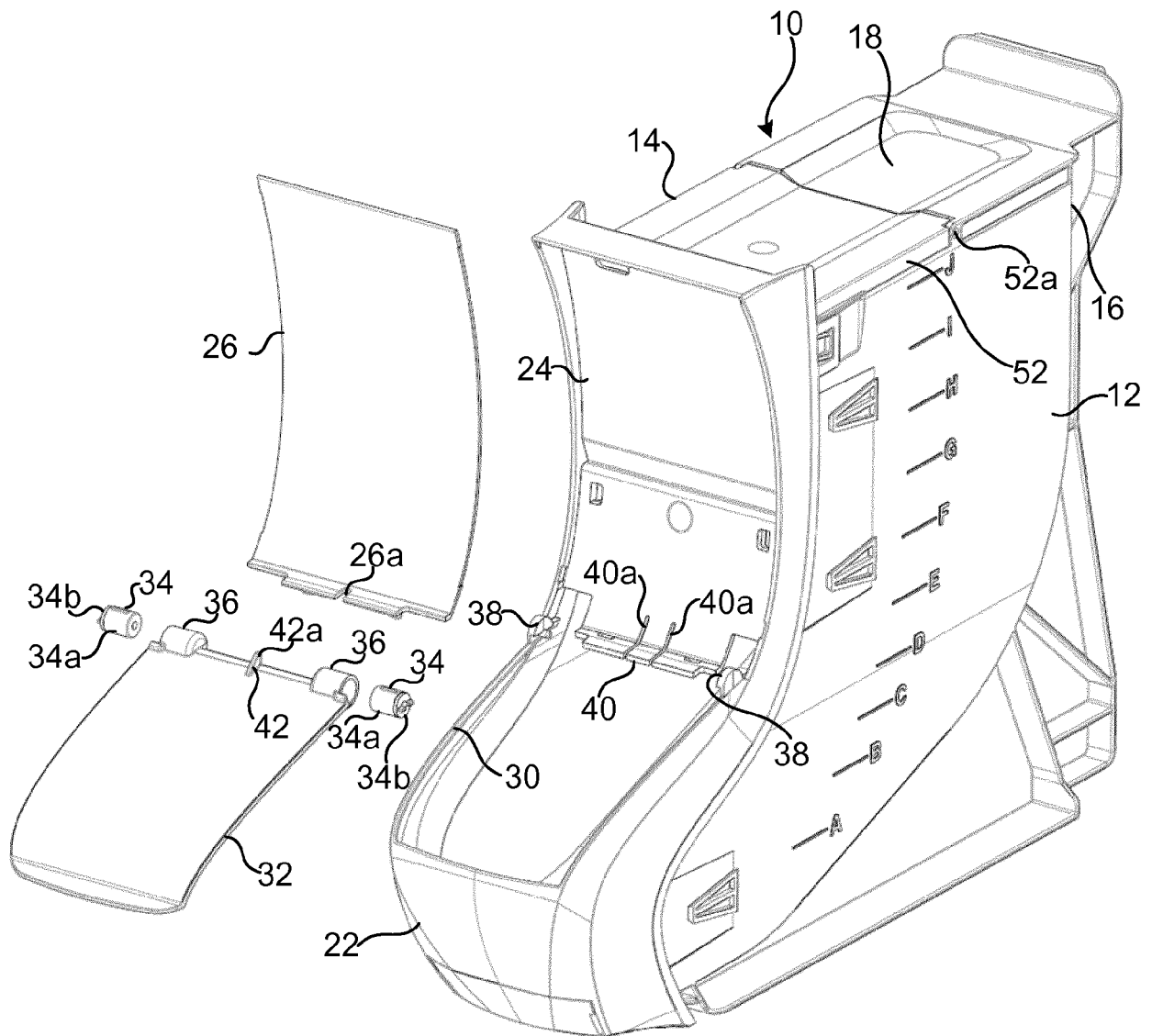


Fig. 1

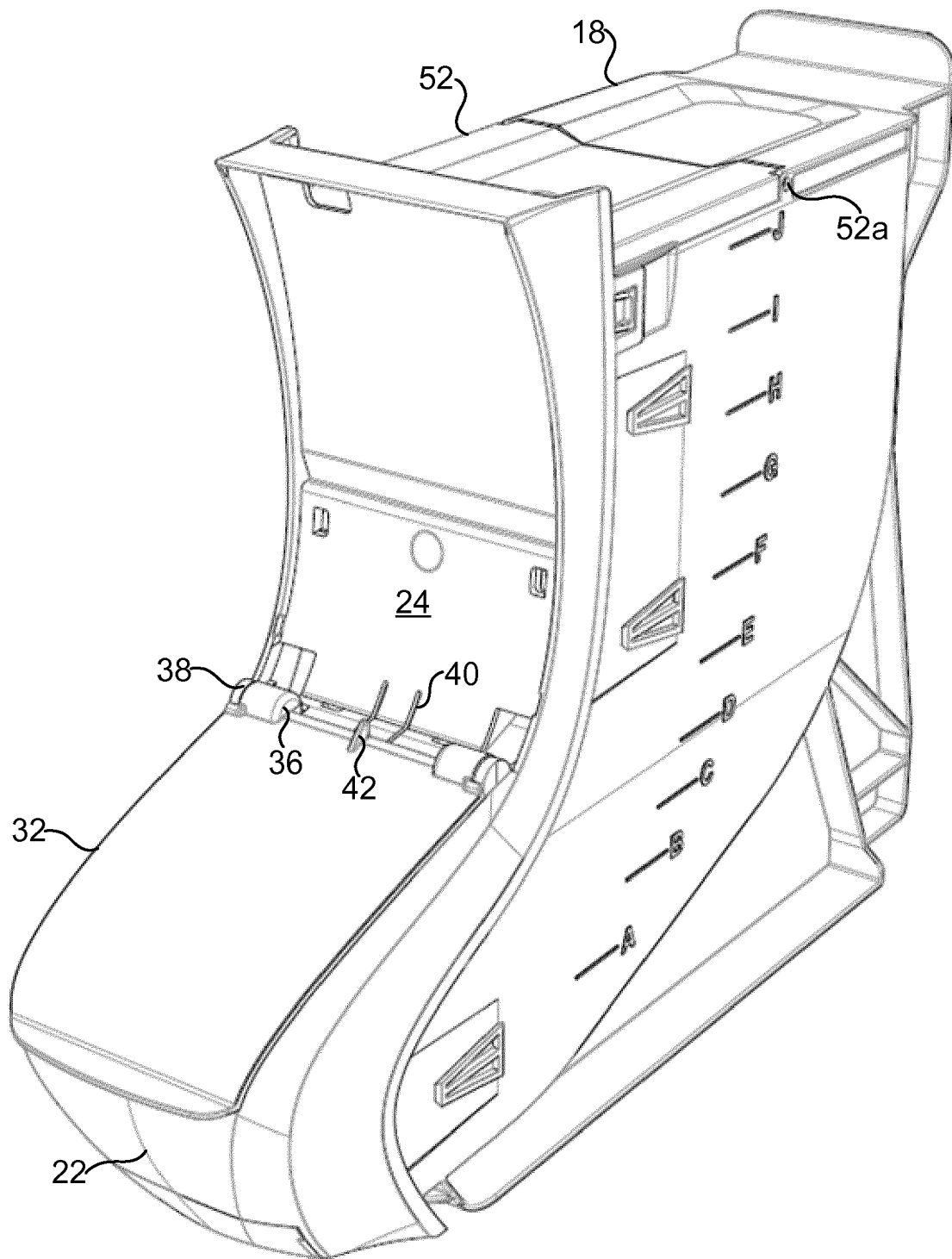


Fig. 2



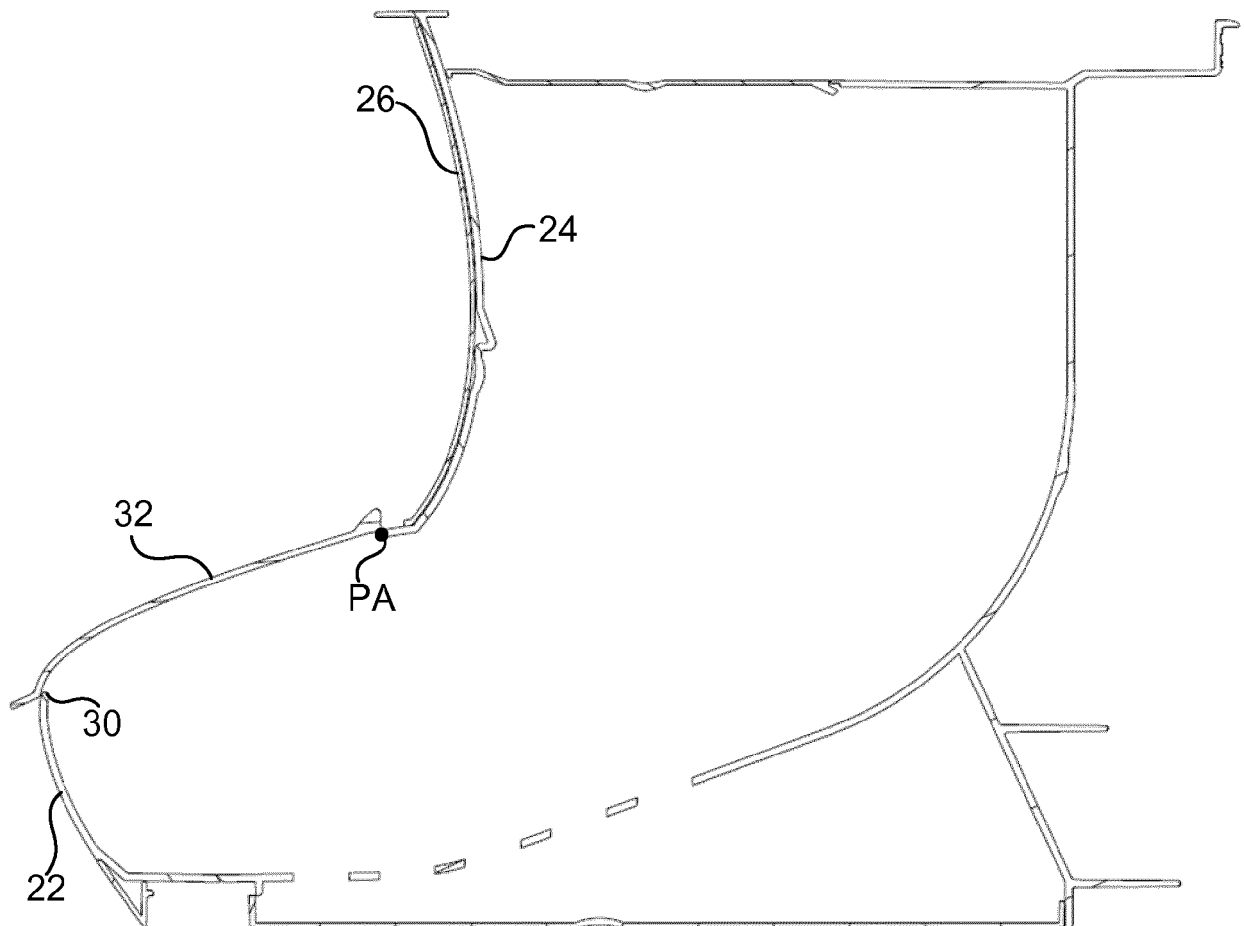


Fig. 3a

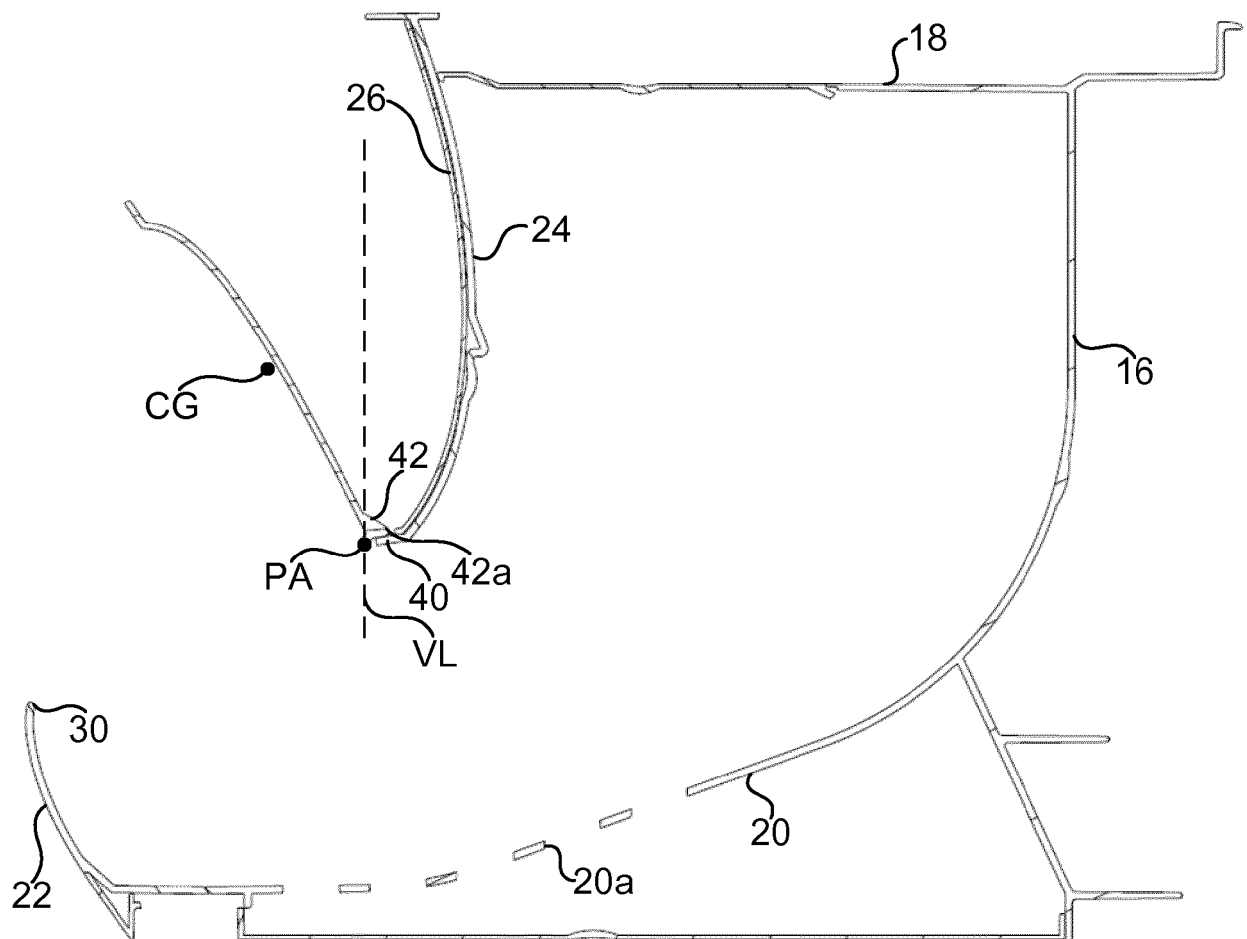


Fig. 3b

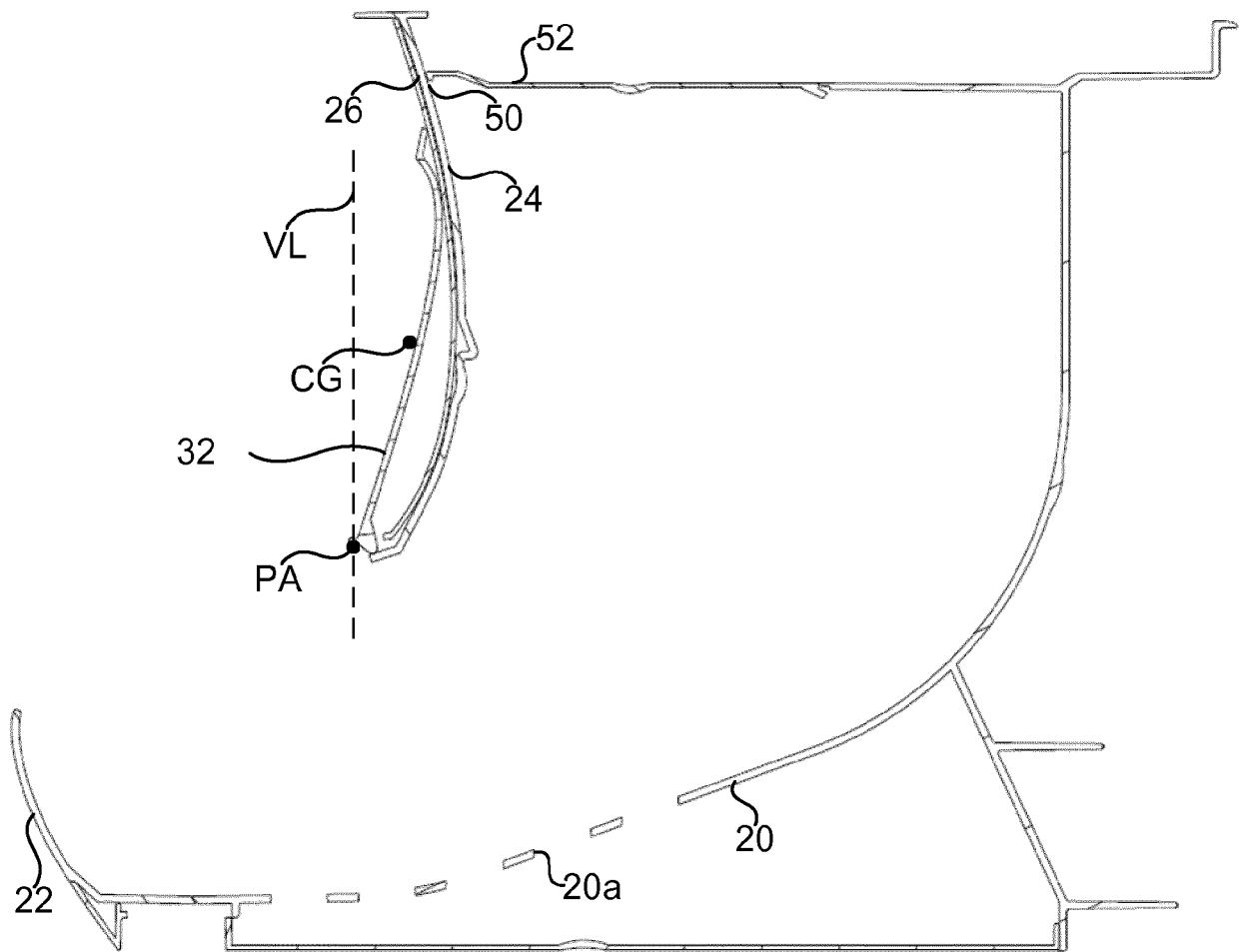


Fig. 3c

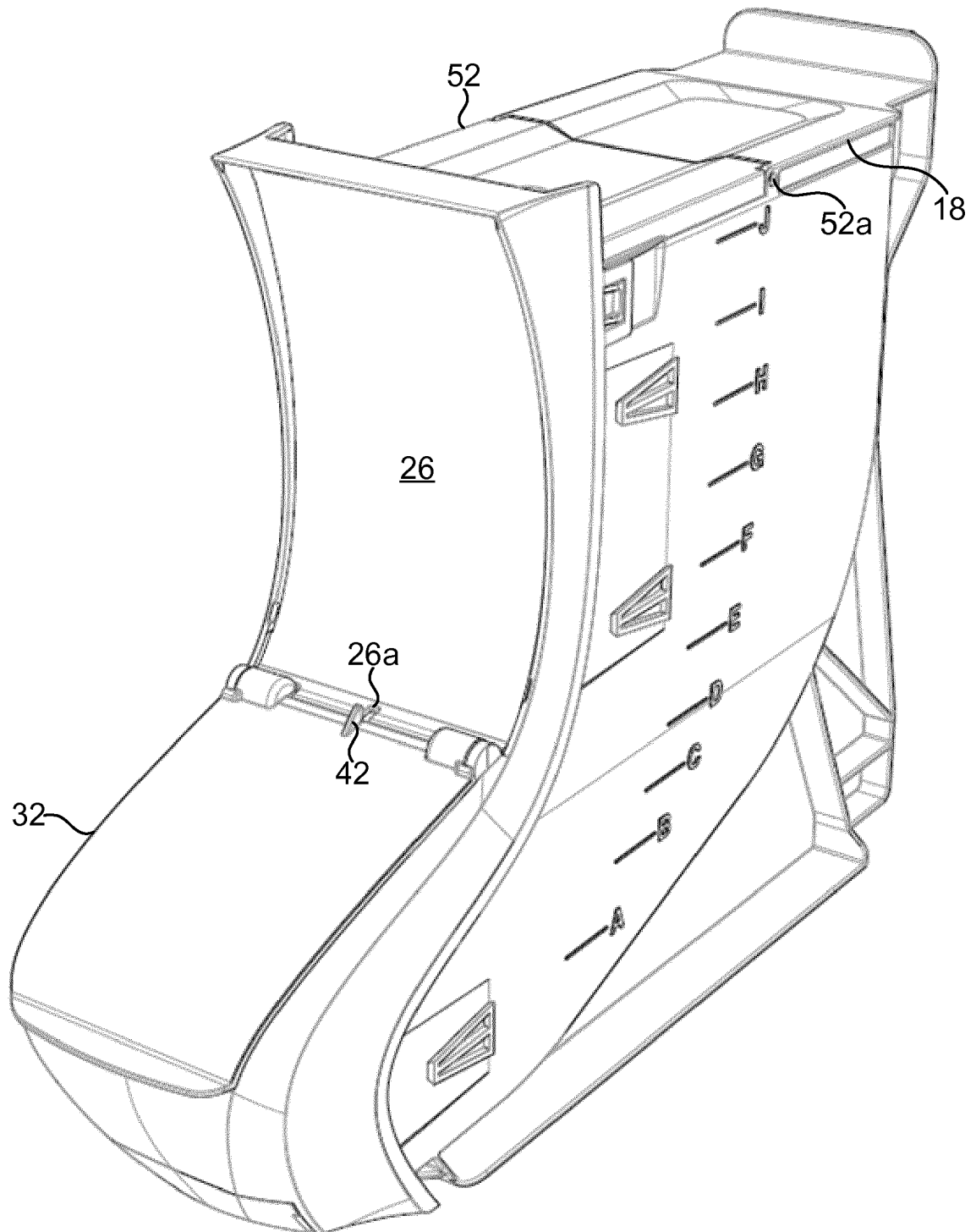


Fig. 4



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Application Number  
EP 19 20 4591

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A,D	EP 2 394 535 A1 (HL DISPLAY AB [SE]) 14 December 2011 (2011-12-14) * Fig. 4 (22) discloses the features of the invention claim 15. *	15	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47F
The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>16 December 2019</b>	Examiner <b>Ottesen, Rune</b>
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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 19 20 4591

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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**REFERENCES CITED IN THE DESCRIPTION**

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