(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
08 October 2020 (08.10.2020)

WIPO | PCT

(10) International Publication Number
WO 2020/201394 A1

(51) International Patent Classification:
B65D 81/38 (2006.01) *F25C 5/20* (2018.01)
F25C 5/182 (2018.01) *F25D 3/08* (2006.01)

(21) International Application Number:
PCT/EP2020/059325

(22) International Filing Date:
01 April 2020 (01.04.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PA201970207 01 April 2019 (01.04.2019) DK
PA201970220 07 April 2019 (07.04.2019) DK

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report (Art. 21(3))*

(54) **Title:** CONTAINER FOR STORING AND DISPENSING ICE CUBES

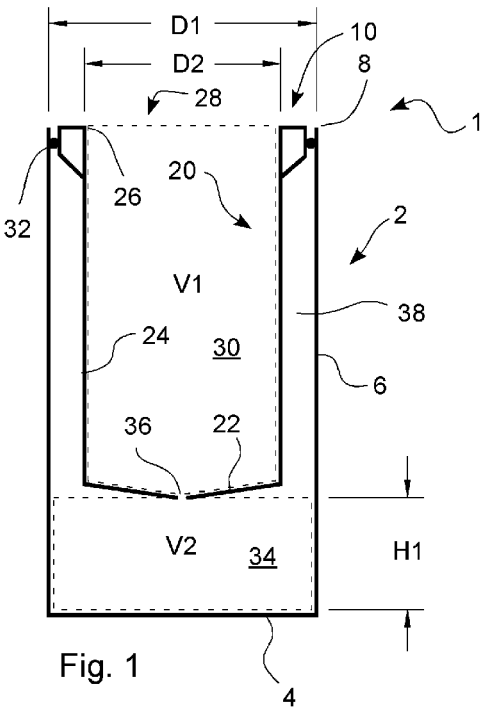

Fig. 1

(57) **Abstract:** A container comprising a first compartment having a bottom portion, a side wall portion extending from the bottom portion up to an upper edge and a dispensing opening in the first compartment near the upper edge, said first compartment having a total volume V1 and said first compartment being suitable for containing ice cubes. The container further comprises a second compartment arranged below the first compartment when the container is in its upright position, said second compartment being separated from the first compartment by the bottom portion of the first compartment, said bottom portion having a drain opening through which water can pass from the first compartment to the second compartment, a volume V2 of the second compartment arranged underneath the drain opening being at least 10% of the volume V1 and said volume V2 and said drain opening being arranged such that ice cubes can be dispensed from the first compartment of the container by tipping the container around a horizontal axis and shaking the ice cubes out of the first compartment without ice melt water leaving the volume V2 when the volume of ice melt water is less than 10% of the volume of V1 and the container is tipped 95 degrees from its upright position. In this ways, a simple and easy way to dispense ice cubes is provided without risking undesired ice melt water from leaving the container.

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Container for storing and dispensing ice cubes

The current invention relates to a container comprising a first compartment having a bottom portion, a side wall portion extending from the bottom portion up to an upper edge and a dispensing opening in the first compartment near the upper edge, said first compartment having a total volume V1 and said first compartment being suitable for containing ice cubes.

Description of related art

Containers which are used to store ice cubes are sometimes called ice buckets or ice pails. In this specification, the term “container for storing ice” is used as it is more generic. In this specification, the containers which are disclosed are mainly meant to store ice cubes. However the containers of the current invention could also be used to store crushed ice or other relevant products.

Containers for storing ice are well known in the art. Such containers are typically relatively large containers having a compartment formed with a bottom portion and a sidewall portion extending from the bottom portion towards an upper free edge thereby forming an opening for the compartment. Ice cubes can be arranged inside the compartment and are typically removed either by a form of spoon/scoop or by tongs.

Containers for storing ice come in all sorts of shapes and sizes. Some of them have insulated side walls. Some of them have lids. However all of the existing containers are provided as containers which are designed to be placed on a flat surface, such as a table, and then ice cubes are manually taken from the container and placed in another glass or container. This typically requires the use of two hands, one to hold the ice bucket and one to hold the utensil or tongs. In other cases, the container is made large enough so that it has an inertia which prevents it from moving while taking out the ice cubes.

Some examples of more advanced containers for storing ice which have some similarities with the current invention are provided below. It should however be noted

that these prior art containers are containers of the traditional kind which are placed on a surface and ice is removed with a spoon/scoop or with tongs.

Some sample prior art ice buckets are provided in EP0089733, GB2262158, GB691447 and GB2300111.

Summary of the invention

A first aspect of the current invention is to provide a container for storing ice as mentioned in the opening paragraph from which ice cubes can be served directly, without needing to touch the ice or without having to use a spoon/utensil/tong.

A second aspect of the current invention is to provide a container for storing ice as mentioned in the opening paragraph which separates the ice from any ice melt water.

A third aspect of the current invention is to provide a container for storing ice as mentioned in the opening paragraph from which ice cubes can be dispensed while holding any ice melt water inside the container.

These aspects are solved at least in part by the container further comprising a second compartment arranged below the first compartment when the container is in its upright position, said second compartment being separated from the first compartment by the bottom portion of the first compartment, said bottom portion having a drain opening through which water can pass from the first compartment to the second compartment, a volume V2 of the second compartment arranged underneath the drain opening being at least 10% of the volume V1 and said volume V2 and said drain opening being arranged such that ice cubes can be dispensed from the first compartment of the container by tipping the container around a horizontal axis and shaking the ice cubes out of the first compartment without ice melt water leaving the volume V2 when the volume of ice melt water is less than 10% of the volume of V1 and the container is tipped 95 degrees from its upright position. In this way, when the container is standing upright, any ice melt water will drain down through the drain opening and into the second compartment. The

second compartment will then capture the ice melt water and prevent it from pouring out when the container is tipped to serve the ice cubes.

In one embodiment, the volume V2 is at least 20%, at least 30%, at least 40% or at least 50% of the volume V1.

In one embodiment, the volume of ice melt water, which can be held back when the container is tipped 95 degrees from its upright position, is less than 20%, less than 30%, less than 40% or less than 50% of the volume V1.

In one embodiment, the container could comprise a holding portion with a horizontal cross section having a maximum outer width of less than 11cm, less than 10cm or less than 9cm. In this way, a user than hold the container by holding onto the outer surface of the container. In one embodiment, the holding portion has a forward narrow portion arranged further from the user's hand than the location of the maximum outer width of the holding portion, which is narrower than the maximum outer width of the holding portion. In one embodiment, the holding portion is a handle and the forward narrow portion is a hollow area. In one embodiment, the holding portion is fixed in position with respect to the first compartment. In one embodiment, the holding portion is a fixed handle fixed in position with respect to the first compartment.

In one embodiment, the holding portion has a shape which is suitable for an average sized woman's hand to hold the container upright and tip it using only one hand. The holding portion can be made in different ways which should be clear to the person skilled in the art based on the teachings of this specification.

In one embodiment, the first compartment has a dispensing opening having a diameter of less than 15cm, less than 13cm, less than 10cm, less than 7,5cm or less than 5cm. In one embodiment of the container, the upper edge of the first compartment is formed with a dispensing spout.

In one embodiment, the container has an outer container having a bottom portion and side walls extending upwardly from the bottom portion towards an upper edge

and an inner container arranged removably in the outer container, said inner container forming the first compartment and said second compartment being formed between the inner container and the outer container.

In one embodiment, the centre longitudinal axis of the outer container is horizontally offset from the centre longitudinal axis of the inner container in the upright position of the container. In this way, a larger volume will be available on one side of the container than on the other side. By arranging the volumes like this, the outer diameter of the container itself can be reduced without reducing the amount of ice melt water which can be container in the container.

In one embodiment, there is a greater distance between the outer surface of the inner container and the inner surface of the outer container on one side of the container than on the other side of the container.

In one different embodiment, the inner and outer containers are arranged concentrically.

In one embodiment, the inner container and the outer container are separated by an air gap. This can have an insulating effect. In one other embodiment, the outer container is covered by an insulating cover, for example a neoprene cover, or a thinsulate cover. In one embodiment, the air gap is provided with water holding elements which hold some of the ice melt water in the air gap when the container is in its upright position. In one embodiment, the air gap is arranged above the volume V2. In one embodiment, the air gap is arranged between an inner surface of the outer portion of the container and an outer surface of the first compartment. In one embodiment, the air gap is arranged outside the first compartment. In one embodiment, the air gap completely surrounds the first compartment.

In one embodiment, the volume V2 located below the drain opening is in fluid communication with the air gap. In this way, when the container is tipped, some of the ice melt water can flow into the air gap.

In one embodiment, a volume V3 of the second compartment arranged underneath the drain opening in the bottom portion of the first compartment when the container is rotated 95 degrees from its upright position, is at least 10%, at least 20%, at least 30%, at least 40% or at least 50% of the total volume V1 of the first compartment.

In one embodiment, the first compartment comprises a water capture element having a volume V4. In one embodiment, the volume V4 is at least 5%, at least 10% or at least 15% of the volume V1. In one embodiment, the water capture element is in fluid communication with the bottom of the first compartment. In one embodiment, the water capture element is arranged above the bottom of the first compartment. In one embodiment, the water capture element comprises a channel open in the direction towards the bottom of the first compartment and arranged along at least a portion of the outer circumference of the dispensing opening, such that water flowing along the sides of the first compartment, will be captured in the channel. In one embodiment, the channel is arranged along the entire outer circumference of the dispensing opening.

It should be noted that in the current claim set, the container comprises a first and a second compartment, where ice melt water is captured in the second compartment. However, a container could be imagined which did not have a second compartment, but only had a first compartment and then a water capture element as mentioned here arranged in fluid communication with the bottom of the first compartment. In this way, ice melt water could be captured by the water capture element when the container is tipped. This could be the subject of a divisional application in the future.

In one embodiment, the drain opening is provided with a valve which is open in the upright position and closed when the container is tipped more than 50 degrees, more than 60 degrees, more than 70 degrees or more than 90 degrees.

In one embodiment, the flow rate through the bottom portion, when the container is tipped 95 degrees and when the container comprises a volume of ice melt water which is less than 10% of the volume V1, is less than 1 litres / minute. It should be noted that this does not as such disclose the flow rate through the drain opening. In the case shown in for example figure 1, there is a single drain opening with a

relatively large diameter. The flow rate through this opening could be relatively large. However, the placement of the drain opening in figure 1 has been chosen to prevent flow through the opening when the container is tipped to 95 degrees. In other embodiments, instead of having a single drain opening which is placed at a strategic location to prevent flow in the tipped position, many smaller holes could be placed with a lower flow rate.

In one embodiment, the volume of ice melt water is less than 20%, less than 30%, less than 40% or less than 50% of the volume V1. In one embodiment, the flow rate is less than 0.75 litres / minute, less than 0.5 litres / minute or less than 0.4 litres / minute. In one embodiment, the flow rate is less than 0.3 litres / minute, less than 0.2 litres / minute or less than 0.1 litres minute.

In one embodiment, the container comprises ice cubes in the first compartment. In one embodiment, the container comprises crushed ice in the first compartment.

In one embodiment, the container further comprises a displaceable ice pick, said ice pick being in the form of an elongated element having a length which is at greater than half of the height of the container or greater than half of the height of the first compartment. In this way, the ice pick can be used to jam into the ice cubes to loosen the ice cubes from each other. In one embodiment, the length of the ice pick is greater than 60%, greater than 75% or greater than 90% of the height of the container or the first compartment.

In one embodiment, the container further comprises a displaceable lid, said lid having at least two positions, a first position where the lid closes the dispensing opening to prevent ice cubes stored in the container from leaving the container and a second position where the dispensing opening is open to allow ice cubes stored in the container to leave the container through the dispensing opening. In this way, the insulation properties of the container can be improved if the lid also reduces the air flow around the ice cubes in the container. Likewise, the lid can be used to control the motion of the ice cubes through the dispensing opening.

In one embodiment, the container comprises a lid displacing mechanism, said lid displacing mechanism being arranged to displace the lid between the first and second positions and hold the lid the first and second positions. In one embodiment, the lid displacing mechanism allows free movement between the first and second positions of the lid. In one embodiment, the lid displacing mechanism, comprises a biasing mechanism which biases the lid into the first and/or second positions.

In one embodiment, the lid displacement mechanism comprises a hinge, said hinge connecting the lid in a pivotable manner to the container such that the lid can pivot between the first and second positions.

In one embodiment, an ice pick, as described above, is attached to the lid. By attaching the lid and the ice pick together, the user can operate the ice pick and the lid together as one unit, instead of having to control two elements.

In one embodiment, the ice pick pivots together with the lid when the lid is displaced from the first to the second position.

In one embodiment, the ice pick is arranged outside the container in both the first and second positions of the lid, such that a user of the container can displace the ice pick to control the position of the lid. In one embodiment, the user can pivot the ice pick. In one embodiment, the user can move the ice pick up and down. In one embodiment, the user can rotate the ice pick about its longitudinal axis.

In one embodiment, the container comprises a handle offset from the outer surface of the container and in that the ice pick is arranged in a gap between between the outer surface of the container and a surface of the handle which faces the outer surface of the container.

In one embodiment, the ice pick is arranged inside the container. In another embodiment, the ice pick is arranged outside the first compartment.

It should be emphasized that the term "comprises/comprising/comprised of" when used in this specification is taken to specify the presence of stated features,

integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

Brief description of the drawings

In the following, the invention will be described in greater detail with reference to embodiments shown by the enclosed figures. It should be emphasized that the embodiments shown are used for example purposes only and should not be used to limit the scope of the invention. Furthermore, it should be noted that the figures are shown in a very schematic manner to illustrate the principles of the invention without providing an excess of details which would overly complicate the figures. Likewise, for the sake of simplicity, the cross sectional views have been shown schematically and only the elements on the sectional plane are shown. In this respect, the elements located behind the section plane are not shown, even though they would typically be shown in a real cross sectional view..

Figure 1 shows a schematic cross sectional view of a first embodiment of a container according to the current invention in an upright position.

Figure 2 shows a schematic top view of the container of figure 1.

Figure 3 shows a schematic cross sectional view of the container of figure 1, rotated 95 degrees from the upright position to a dispensing position.

Figure 4 shows a schematic cross sectional view of a second embodiment of a container according to the current invention in an upright position.

Figure 5 shows a schematic cross sectional view of a third embodiment of a container according to the current invention in an upright position.

Figure 6 shows a schematic cross sectional view of a fourth embodiment of a container according to the current invention in an upright position.

Figure 7 shows a schematic cross sectional view of a fifth embodiment of a container according to the current invention in an upright position.

Figure 8 shows a schematic cross sectional view of a sixth embodiment of a container according to the current invention in an upright position.

Figure 9 shows a schematic detail cross sectional view of the dividing wall of the container of figure 8 as defined by the circular area IX in figure 8.

Figure 10 shows a schematic cross sectional view of a seventh embodiment of a container according to the current invention in an upright position.

Figure 11 shows a schematic detail cross sectional view of one embodiment of a dividing wall of the container of figure 10 as defined by the circular area XI in figure 10.

Figure 12 shows a schematic cross sectional view of an eighth embodiment of a container according to the current invention in an upright position.

Figure 13 shows a schematic top view of the container of figure 11.

Figure 14 shows the container of figure 12 in a dispensing position, rotated 95 degrees from the upright position of figure 12.

Figure 15 shows a schematic top view of a ninth embodiment of a container according to the current invention.

Figure 16 shows a schematic cross sectional view of a tenth embodiment of a container according to the current invention in an upright position.

Figure 17 shows a detail view of the area XVII in figure 16 in an upright position.

Figure 18 shows the same area XVII in figure 16, but after the container has been rotated to a dispensing position.

Figure 19 shows a schematic cross sectional view of an eleventh embodiment of a container according to the current invention in an upright position.

Figure 20 shows a schematic cross sectional view of a twelvth embodiment of a container according to the current invention in an upright position.

Figure 21 shows a schematic cross sectional view of a thirteenth embodiment of a container according to the current invention in an upright position.

Figure 22 shows a schematic cross sectional view of a fourteenth embodiment of a container according to the current invention in an upright position.

Figure 23 shows a schematic cross sectional view of a fifteenth embodiment of a container according to the current invention in an upright position.

Figure 24 shows a schematic cross section view of a sixteenth embodiment of a container according to the current invention in an upright position.

Figure 25 shows a schematic cross section of the inner container of the container of figure 24, when removed from the outer container.

Figure 26 shows a schematic top view of a flexible flap of the inner container of figure 25.

Figure 27 shows a schematic side view of a seventeenth embodiment of a container according to the current invention in an upright position.

Figure 28 shows a schematic side view of the container of figure 27 with the lid removed from the container.

Figure 29 shows a schematic side view of an eighteenth embodiment of a container according to the current invention in an upright position.

Figure 30 shows a schematic bottom view of the lid of the container of figure 29.

Figure 31 shows a schematic top view of the container of figure 29 without the lid.

Figure 32 shows a schematic side view of a nineteenth embodiment of a container according to the invention.

Figure 33 shows a schematic side view of the container of figure 32 in a pivoted position with the lid in a first position.

Figure 34 shows a schematic side view of the container of figure 32 in a pivoted position with the lid in a second position.

Detailed description of the embodiments

Figures 1 and 2 show a first embodiment 1 of a container according to the current invention. The container comprises an outer container 2 comprising a bottom portion 4, a sidewall portion 6 extending upwardly to a free upper edge 8 forming an opening 10 in the outer container 2. Inside the outer container is arranged an inner container 20. The inner container also comprises a bottom portion 22, a sidewall portion 24 extending upwardly from the bottom portion to an upper edge 26 forming an opening 28 in the inner container. The inner container forms a first compartment 30 with a total volume V1 as illustrated with the dashed line. The inner container is arranged inside the outer container and is held centred in place in the outer container via an O-ring gasket 32 arranged between inner and outer containers.

A user can remove the inner container from the outer container by pulling the inner container out of the outer container. The o-ring gasket forms a friction fit between the two containers. Once the inner container has been removed from the outer container, the two containers can be washed and any liquid which is located between the inner and outer containers can be removed.

Ribs (not shown) or other forms of spacing elements (not shown) can be arranged between the inner and outer containers to align the containers properly and prevent

the containers from displacing with respect to each other during use. These ribs or spacing elements could be attached to the outer surface of the inner container and/or the inner surface of the outer container.

When the inner container is placed inside the outer container, a second compartment 34 is formed in the space between the inner surface of the inner container and the outer surface of the inner container.

As can be seen from figure 1 and 3, the bottom portion of the inner container is provided with a small opening 36. When ice cubes are placed in the first compartment, the ice will slowly melt. The ice melt water will run down the ice cubes and end up on the bottom portion 22 of the inner container 20. The ice melt water will then flow through the opening 36 and into the second compartment 34.

As can be seen from figure 1, the small opening 35 is placed a distance H1 from the bottom portion of the outer container. As such, a volume V2 shown by the dashed line is formed underneath the opening 36 in the inner container 20. As long as the volume of the ice melt water is less than V2, then there will be no ice melt water in the first compartment and the ice cubes located in the first compartment will stay dry. If the volume of ice melt water increases, then some water will remain in the first compartment.

In this embodiment, the inner 20 and outer 2 containers have different diameters. The sidewall portion 24 of the inner container has an outer diameter D2 and the sidewall portion 6 of the outer container has an outer diameter D1. The diameter D2 is smaller than the diameter D1 and as such, there is an air gap 38 between the inner and outer containers. This air gap is, in this embodiment, in fluid communication with the second volume V2 at the bottom of the outer container. As the container is tipped about a horizontal axis, ice melt water which has flown into the bottom portion of the outer container flows into the air gap. This is shown in figure 3.

If the container is not rotated too much, then even when the container is rotated, water will not flow out of the opening as the water will be arranged in the air gap.

Due to this feature, ice cubes can be dispensed easily from the container just by tipping the container and shaking the ice cubes out of the container. The ice melt water will remain trapped in the container and nothing will come out, even when tipping the container over 90 degrees. In the shown embodiment, the volume of the second compartment located above the opening is greater than V2, hence, the container could be rotated completely 180 degrees without any water leaving the second compartment.

Experience has shown, that when ice cubes are arranged in a compartment, then there will be airgaps between the ice cubes. From experience, it has been found that when a volume V1 is randomly filled with ice cubes, then when those ice cubes melt, the ice melt water will occupy around 50% of the volume V1. This is due in part to the airgaps between neighbouring ice cubes as well as the reduction in volume when ice melts.

In one embodiment, in order to take the worst case situation, where no ice cubes are consumed and all the ice cubes melt, then the volume V2 has to be approximately 50% of the volume of V1.

In order to define the required size of the airgap between the inner and outer container, a volume V3 is defined and shown by the dashed line in figure 3. This volume V3, is defined as the volume between the inner and outer container which is located below the opening 36, when the container has been rotated 95% about a horizontal axis from its upright position, see figure 3. As with the volume V2, the volume V3, is set to 50% of V1 to fill the worsk case situation.

However, in experience, it is often the case that the user will consume at least some ice cubes prior to all the ice cubes melting. Likewise, it has been shown, that by separating the ice cubes from the ice melt water, the ice cubes melt much more slowly. Hence, in most situations, the volumes V2 and V3 can be made smaller than 50% of V1. For example in many cases, a volume of 30% or 40% of V1 will be suitable.

The figures are shown schematically and they ratio of the volumes V1, V2 and V3 from the figures should not be taken literally. The designer of the container will be able to select the ratio of V1, V2, V3 depending on the desired functionality. For example, a smaller more effective container can be provided if V2 and V3 are reduced. However, this will reduce the amount of ice melt water which can be contained before it starts to mix with the ice cubes.

In the case where the same container will be used for many portions of ice cubes, without emptying the ice melt water regularly, then the volumes V2 and V3 could be made even larger than 50% of V1. This will allow more ice cubes to melt prior to there being water in the first compartment.

In one embodiment, an indicator could be arranged in the side wall of the outer container around the level of the opening 36. In this way, when the level of ice melt water has reached a critical value, then the indicator could show and the user will know that the ice melt water should be emptied.

In the embodiment shown in figures 1-3, the ice melt water can be emptied by removing the inner container from the outer container, pouring the water from the outer container and then replacing the inner container in the outer container.

One especially beneficial aspect of this embodiment, is that the outer container can be arranged with a diameter which a user can hold with one hand. In this way, a user can grab the container around its outer diameter, tip it over, dispense the ice cubes and then place the container in its upright position again. In this embodiment, the outer diameter of the outer container can be made approximately 10cm. Larger diameters are possible, but then they will start to be difficult to hold onto, especially for people with smaller hands.

This type of container for storing and dispensing ice cubes could also be used together with a larger ice bucket or ice trough, for example in a bar or restaurant. The bar tender could dip the container into an ice trough or bucket, scoop up some ice cubes inside the container and then use the ice cubes without having to go into the ice trough so frequently.

It should be understood that this illustration is very schematic and the basic functionality can be provided with many different forms of construction. It is maintained that the person skilled in the art of manufacturing containers will be able to easily provide a suitable construction to fulfil the requirements of the current invention. Hence, more details will not be provided here as they will just unnecessarily add extra material to this specification.

Figure 4 shows another embodiment 50 of a container according to the current invention. In this embodiment, the container is to a large extent identical to the one of figure 1 and as such, identical features will not be described in detail. However, this embodiment has a lid 52 which is pivotably connected to the upper edge 26 of the inner container 20 via a hinge 54. As the container is tipped over about an axis which is parallel to the axis of the hinge, the lid will open once the container is rotated more than 90 degrees, thereby allowing ice cubes to dispense from the container. When the container again is rotated back towards its upright position, the lid will again return to its closed position.

Suitable lids can be formed in many different forms and more details will not be provided herein as it is maintained that the person skilled in the art, will be able to provide suitable lid arrangements. For example, in this embodiment, the lid is hinged to the inner container, however in other non-limiting embodiments, the lid could be removable or it could be manually pivotable from a closed to an open position. A lid could also be provided as a flexible rubber like flap which will deform when the container is rotated past 90 degrees from the upright position and the ice cubes try to push past the lid.

In this embodiment, a handle 56 is also provided. This allows the use of a container having an outer diameter which is larger than what would be suitable for holding with a normal sized hand. Also, the use of a handle will constrain the use of the container and it will be able to more precisely determine about which axis the container will be tipped by the user. This can be used to optimize the dimensions of the container as will be discussed later on. In this case, the handle is a fixed handle which allows tipping of the container with a single hand. This is in contrast to some of the prior art

containers which comprise pivotable handles which allow the ice bucket to swing under the handle. A container with a pivotable handle would require the use of two hands to tip the bucket. In contrast, with a fixed handle, where the handle is fixed to the outer container, the user can tip the container to dispense ice cubes with the use of only a single hand.

Figure 5 shows a third embodiment 60. In this embodiment, an outer container 62 and an inner container 64 are manufactured as two separate elements and are then welded/joined 66 together at an upper edge to form a completely sealed unit. A plug 68 in the base of the outer container can be opened to empty the ice melt water and to clean the inside of the container.

Figure 6 shows a fourth embodiment 70 of a container. In this case, a single element 72 is manufactured comprising both an outer 74 and an inner 76 portion, for example in a blow moulding operation. A plug 78 is placed in the bottom surface of the container to allow the water to be drained and the container to be washed.

Figure 7 shows another embodiment 80 of a container. In this case, the inner container 82 and an upper portion 84 of the outer container are made from a single element and a lower portion 86 of the outer container is joined to the upper portion of the outer container via a screw joint 88 or other form of suitable connection. When it is desired to remove the ice melt water from the container, the two parts can be unscrewed. In this case, no plug needs to be provided.

Figures 1-7 have all shown relatively similar embodiments, where the ice melt water was arranged to be captured in the air gap between the inner and outer containers when the container is tipped. However, these forms of construction require an air gap having a certain volume to work. If the air gap has too small a volume, then the ice melt water would over flow out through the opening in the bottom portion of the inner container when the container was tipped over.

However, in another embodiment, instead of forming the container with an air gap, the bottom portion of the first compartment is formed with an opening which allows more flow from the first compartment to the second compartment in the upright

position, than from the second compartment to the first compartment in the dispensing position.

Figure 8 shows a first embodiment 90 of this. In this embodiment, the diameters of the inner 92 and outer 94 containers are closer together an there is a much smaller air gap 96 between the containers. The volume V2 is similar to that of the first embodiments, but the air gap is sealed off via gaskets 98 and no ice melt water can be arranged in the airgap 96.

However, in this embodiment, instead of using a single opening in the bottom portion 98, the bottom portion is formed with a number of smaller holes 100 in small recesses 102 in the bottom surface. A detail view of one schematic embodiment of a bottom portion is shown in figure 9. These recesses could be trough or cone shaped depressions. Water will therefore relatively easily flow from the first compartment 104 to the second compartment 106, but will have a more difficult path from the second compartment to the first compartment when the container is tipped. While a small amount of water will flow through the openings in the tipped position, the openings can be designed such that the total flow will be so low as to be negligible.

In one embodiment, the bottom portion is formed from a flexible material which is deformable. In one example, the bottom portion is formed from a rubber or silicone material. This will make it very easy to clean, as the bottom portion can be deformed easily to prevent calcium build up and/or other particle buildup. Forming the bottom portion from a deformable material, will even further help in limiting the flow through the holes. When water is arranged on the top surface of the bottom portion, then the water will press the recesses to deform outwardly which will open the holes. When the water is arranged on the bottom surface when the container is tipped, then the water pressure will force the openings to close.

In one embodiment (not shown), the bottom portion of the inner container could be formed with a stiffer grate element which will support the weight of the ice cubes in a secure manner, and permit essentially free water flow through the grate element. A deformable membrane with a suitable hole pattern could be arranged underneath the grate element. In this way, the weight of the ice cubes is supported by the grate

and the flexible membrane can be optimized to control the flow parameters. In one embodiment, the deformable membrane could be made removeable from the grate element. In this way, the membrane element and the grate element could be more easily cleaned. Furthermore, the membrane could be replaced if necessary.

Figure 10 shows another embodiment 110 similar to figure 8, however in this case, an additional water capturing element 112 has been arranged around the upper edge of the inner container 114. If there is any water which leaks through the bottom portion 116 of the first compartment 118 in the tipped position of the container, then water will flow along the side 120 of the container and be caught in the water capture elements 112. Ice cubes on the other hand will just slide over the water capture elements and exit the container without any problems. Hence, any ice melt water which could be located in the first compartment will not leak from the first compartment, but be caught in the water capture elements.

In this embodiment, the water capture elements are formed as an annular element 122 arranged along the upper edge of the inner container. The annular element has an internal volume V4 and is in fluid communication with the interior portion of the first compartment via an annular opening 124. The annular opening is arranged above the bottom portion 116 of the inner container and below the upper edge of the container. The annular opening is arranged close to the side wall of the container, such that water flowing along the side wall, easily enters the volume V4. The annular opening is however also formed such that ice cubes are not stopped by the opening and are able to slide over the opening to be dispensed easily from the container. In the current embodiment, the annular element is arranged to extend inwardy from the vertical side wall portion. However in another embodiment, not shown, the side wall portion could be angled outwardly and the annular element could extend vertically.

The volume V4 is chosen depending on how much ice melt water could be expected in the first compartment. If most of the water passes through the bottom portion and there is very little return flow when tipped, then the volume V4 can be made quite small. If the return flow through the bottom portion is relatively high, then the volume

V4 can be chosen to be large enough to capture the expected water flow through the bottom portion in the tipped postion.

It should be noted that in this type of embodiment, it could be imagined that the bottom portion has a max flow rate in the direction from the second compartment to the first compartment in the dispensing position which is less than that which would be required to fill the water capture elements during a typical dispensing operation.

In one embodiment, of a water capture element (not shown), the annular element as shown in figure 10, could be arranged as a deformable element which had a bi-stable effect. In this case, the annular element could be folded into the container and then folded outwardly when it was desired to clean inside the annular element. In one embodiment, it could be that the lower edge of the bi-stable annular element in the folded down position, could lie up against the inner surface of the inner container. In this case the edge of the bistable annular element could be provided with openings to allow water flow through the openings and into the water capture element.

Figure 11 shows a schematic example of another embodiment of a deformable bottom portion 130. In this embodiment, small water capture flanges 132 have been added to an upper portion of the small recesses 134 to capture any water drops which might be arranged in the recesses during the tipping operation.

As mentioned earlier, if the tipping axis is known, then the container can be further optimized. In figures 12-14, an embodiment of a container 140 is shown which is similar to the one of figure 1, but where the inner container 142 is offset from the axis of the outer container 144 such that the inner and outer containers are not co-axial. In this way, the distance between the inner and outer containers on one side 146 is greater than on the other side 148. Due to this, there will be a larger volume in the air gap on one side 146 of the container. This can be used to collect a larger amount of ice melt water, with a simultaneous reduction in the outer diameter of the outer container. Furthermore, the opening 150 in the bottom portion 152 can be moved to the side of the container which has the smallest air gap, thereby maximizing the volume V3 located under the opening in the bottom portion in the

tipping position. This is illustrated in the figures. A pouring spout 154 can also be provided to allow the ice to be dispensed more precisely.

It should be noted that in the figures above, the inner and outer containers have been shown as cylindrical elements, however, it could also be imagined that the inner and outer containers were cone shaped, rectangular, oval, etc... Likewise, the inner and outer containers could have different shapes from each other.

Figure 15 shows one example embodiment 160 of such a container. In this case, the outer container 162 formed with a more organic shape which is formed from two partial cylinders 164, 166 having two different diameters joined together by tangent pieces 168. The inner container 170 is formed with a corresponding, though smaller shape. The outer diameter D1 of the first cylinder 164 is larger than the outer diameter D2 of the second cylinder 166. In this case, the outer diameter D2 of the second cylinder could be chosen to be suitable for holding onto with a normal sized hand, whereas the outer diameter of the first cylinder could be chosen to be larger than what would be suitable. For example D2 could be made 8cm and D1 could be made 15cm. This would provide for a container which is easy to hold and use, while still having a significant volume of ice. Many other forms of such containers with different shapes are also possible. In one embodiment, the two cylinders could have the same diameter.

Figure 16 shows an embodiment 170 of a container with a form of valve 172 which is open in the upright position of the container and closed in the dispensing position of the container. The valve is formed with a weight element 174 which bends a flexible flap 176 downwards. When the container is tipped, the weight element will bend the flap inwards to close the opening 178 in the bottom portion 180. This is illustrated in the detail views of figures 17 and 18.

The embodiment of figure 16-18 will only work when pivoting the container about one horizontal axis. Figure 19 shows an embodiment of a valve 182 which will work when tipping around any axis. A rubber valve element 184 is arranged to displace up and down in a cage 186 due to gravity as the container is tipped. When the container is in its upright position, then it will be open and when the container is

tipped, it will slide into its closed position to close the opening 188 in the bottom portion 190. Many other forms of suitable valve construction could also be imagined.

Figure 20 shows another embodiment 200, where the opening 202 in the bottom portion 204 is provided with an extended pipe like portion 206 to displace the effective opening to the bottom surface 208 of the outer container 210. In this way, the opening will come free of the ice melt water earlier and the volume V3 will be increased.

Figure 21 shows an embodiment 212 with a rotatable pipe like element 214 connected to the opening 216 in the bottom portion 218 of the first compartment 220. At the end of the pipe like element, a small float element 222 is provided. In this way, as the container is tipped, the end of the pipe like element will attempt to stay on top of the fluid, thereby rotating the pipe like element. This will even further maximize the volume V3, as the free end of the pipe will always be arranged at the highest point in the volume V2. Instead of using a float element, a counterweight (not shown) could be arranged on an extended rod opposite to the free end of the tube. In this way, the counter weight would always rotate downwards due to gravity, and automatically push the free end of the tube upwardly to the highest point in the volume.

Figure 22 shows another embodiment 230. In this case, there is no second compartment and the ice melt water will mix with the ice cubes. However, there is a large annular water capture element 232 as described previously arranged around the upper edge of the container to capture any ice melt water which is in the container when the container is tipped over. Furthermore, there is a dispenser element 234 arranged in the opening 236 at the upper end 238 of the container. The dispenser element 234 is in the form of a dispenser spiral driven by a rod 240 which is driven by a rotatable disc 242 arranged at the bottom of the container. A rotary seal 244 is arranged between the bottom surface of the container and the rod 240. When it is desired to dispense ice cubes from the container, the container is tipped more than 90 degrees, then the disc 242 is rotated and which cases the spiral to rotate and ice cubes will be dispensed one by one from the opening. This is just a single example of a dispenser element. Applicant has co-pending application

WO2018/202874, which is incorporated by reference into this application, which discloses a number of different suitable dispensing mechanisms. While the embodiment shown in figure 22 had no second compartment and had a large water capture element, another similar embodiment with a dispenser could be provided both with a first and second compartment and with or without a water capture element.

Figure 23 shows another embodiment 250 with an inner container 252 which is arranged not co-axial with the outer container 254. The side of the container with the largest airgap 256 is extended upwardly, higher than the side of the container which has the smallest airgap 258. In this way, an even larger volume for collecting ice melt water is provided. Likewise, the opening 260 in the bottom portion 262 of the inner container 252 is arranged at the side of the container which has the smallest air gap. The opening 260 is further provided with an extended tube like portion 264, to ensure that the opening will be located at the highest point in the container, when the container is tipped to dispense the ice cubes.

Figures 24-26 show different views of another embodiment 270 of a container according to the current invention. In this embodiment, the container 270 comprises an outer container 272 and an inner container 274 arranged in the outer container 272. An air gap 276 is formed between the inner and outer containers. As in the previous embodiments, a first volume V1 is formed in the first compartment 278 defined by the inner surface of the inner container 274. An opening 280 is arranged in the bottom portion 282 of the inner container. A second volume V2 is provided between the inner and outer containers below the opening. The second volume and the air gap together form a second compartment 284.

The upper closure is slightly different from the previous embodiments. In this case the outer container has an upper edge 286 and the inner container has an outwardly directed flange 288 which extends over the upper edge 286 of the outer container. A gasket 290 is arranged between the upper edge 286 and a downwardly facing surface of the outwardly directed flange. Or in another embodiment (not shown), a gasket is arranged between the inner and outer surface of the outer and inner containers respectively, near the upper edge of the outer container.

This embodiment, further has four flexible rubber flanges 292 arranged on the outer surface of the inner container. The rubber flanges are circular, as shown in figure 26 and have small openings 294 arranged around the outer periphery of the flange. The figure 26 shows four openings, however additional openings could also be provided. The outer diameter of the flanges is larger than the inner diameter of the outer container. When the inner container is inserted into the outer container, the flanges will bend upwardly, forming a trough shaped reservoir. When the container is tipped, ice melt water 296 will flow into the air gap and will pass the rubber flanges via the small openings 294. When the container is arranged in its upright position again, the water will then flow down along the air gap and some of it will be caught inside the air gap by the flanges. In this way, some of the water will be kept in the airgap, instead of going back to the volume V2. Due to this, the volume V2 can be made smaller than if all the ice melt water should be stored in the volume V2.

The container 300 shown in figures 27 and 28 is very similar to previously disclosed embodiment and as such the specific details will not be described in detail. However of special note in this embodiment is that the container comprises an ice pick 302 in the form of an elongated spear like element attached to a bottom surface of the lid 304. During normal use, the lid is arranged to seal the dispensing opening of the container and the ice pick is arranged in the first compartment 306 together with the ice cubes. When ice cubes are to be dispensed from the container, the lid is removed (figure 28) and ice cubes 308 can be shaken out of the first compartment. The ice pick can be used to loosen the ice cubes if they have become frozen together by jamming the ice pick in between the ice cubes. When the ice cubes have been dispensed, the ice pick is pushed pack into the ice cubes and the lid replaced on the container.

The embodiment 310 shown in figures 29-31 is very similar. However, instead of storing the ice pick 312 in the first compartment 314, the ice pick is stored in the gap 316 between the first compartment and the inner surface of the outer portion 318 of the container. The ice pick is inserted into the gap via a hole or opening 319 in the upper surface of the container. In this way, the ice pick is not stored in the ice cubes when the container is not in use. However, it is easy to remove the lid 311 from the

container to expose the ice pick if needed by pulling the ice pick upwardly out of the hole 319.

In the case where the ice pick is connected to the lid, it could be considered that the user could displace the ice pick and the thereto connected lid to open and or close the dispensing opening in a variable manner, thereby regulating the amount of ice cubes which can leave the container when the user tips the container over. In one embodiment (not shown), the user could displace the lid up and down by displacing the ice pick up and down. In another embodiment (not shown), the user could pivot the lid about the longitudinal axis of the ice pick to again variably open and close the dispensing opening. This displacement could either be provided by the user manually moving the ice pick or lid or different suitable displacement mechanisms which can displace the lid up and down or in a rotatable manner could easily be provided. This could be in combination with a handle (not shown) attached to the external portion of the container.

Figures 32-34 show side views of another embodiment 320 of a container with a lid 322 and an ice pick 324. The container further comprises a handle 326 attached to the outer surface of the container. A gap 328 is formed between the inner surface of the handle and the outer surface of the container. As in the previous cases, the ice pick is attached to the lid in a firm manner.

The lid is pivotably attached to the container via a hinge joint 330. The ice pick 324 is arranged in the gap 328 between the handle and the outer surface of the container. As the ice pick pivots the lid will also pivot. As shown in figure 33, the ice pick is held inside or against the handle thereby keeping the lid closed and preventing ice cubes 332 from leaving the container. In figure 34, the ice pick has been allowed to pivot slightly thereby allowing the lid to also pivot and allow ice cubes to leave the container. The user is easily able to pivot the ice pick with the hand which is also holding the handle of the container. This is an example of a lid displacing mechanism. The person skilled in the art, based on the teaching of this specification together with his or her general knowledge, will be able to prepare other suitable lid displacing mechanisms. Furthermore, it should be noted that, in this embodiment, when the ice pick is needed, the lid and ice pick can be pulled

upwardly away from the container and then the ice pick can be used to jam into the ice cubes and detach them from each other.

In the embodiments described and shown in figures 27-34, the ice pick was attached to the lid. However, other embodiments could also be imagined where the ice pick was separate from the lid or embodiments having only a lid or only an ice pick could also be imagined. For example, in the embodiment of figures 32-34, the ice pick was an integral part of the lid displacing mechanism, and was used to control the motion of the lid. However, it could be imagined that another handle/lever was provided fixed to the lid and a separate ice pick was provided separate from the lid.

It is to be noted that the figures and the above description have shown the example embodiments in a simple and schematic manner. Many of the specific mechanical details have not been shown since the person skilled in the art should be familiar with these details and they would just unnecessarily complicate this description. For example, the specific materials used and the specific manufacturing procedures have not been described in detail since it is maintained that the person skilled in the art would be able to find suitable materials and suitable processes to manufacture the container according to the current invention. Likewise, it should be noted that many different embodiments have been disclosed, each embodiment disclosing individual features. Within the scope of the current disclosure, different combinations of features which are not explicitly mentioned as being necessary for each other, can be combined as the person skilled in the art deems suitable.

Claims

1. A container comprising a first compartment having a bottom portion, a side wall portion extending from the bottom portion up to an upper edge and a dispensing opening in the first compartment near the upper edge, said first compartment having a total volume V1 and said first compartment being suitable for containing ice cubes, **characterized** in that the container further comprises a second compartment arranged below the first compartment when the container is in its upright position, said second compartment being separated from the first compartment by the bottom portion of the first compartment, said bottom portion having a drain opening through which water can pass from the first compartment to the second compartment, a volume V2 of the second compartment arranged underneath the drain opening being at least 10% of the volume V1 and said volume V2 and said drain opening being arranged such that ice cubes can be dispensed from the first compartment of the container by tipping the container around a horizontal axis and shaking the ice cubes out of the first compartment without ice melt water leaving the volume V2 when the volume of ice melt water is less than 10% of the volume of V1 and the container is tipped 95 degrees from its upright position.

2. A container according to claim 1, having a holding portion with a horizontal cross section having a maximum outer width of less than 15, less than 13cm, less than 10cm or less than 9cm.

3. A container according to claim 1 or 2, **characterized** in that the container has an outer container having a bottom portion and side walls extending upwardly from the bottom portion towards an upper edge and an inner container arranged removably in the outer container, said inner container forming the first compartment and said second compartment being formed between the inner container and the outer container.

4. A container according to claim 3, **characterized** in that the centre longitudinal axis of the outer container is horizontally offset from the centre

longitudinal axis of the inner container in the upright position of the container.

5. A container according to any one of claims 3 to 4, **characterized** in that the inner container and the outer container are separated by an air gap.

6. A container according to claim 5, **characterized** in that volume V2 located below the drain opening is in fluid communication with the air gap.

7. A container according to claim 6, **characterized** in that a volume V3 of the second compartment arranged underneath the drain opening in the bottom portion of the first compartment when the container is rotated 95 degrees from its upright position, is at least 10%, at least 20%, at least 30%, at least 40% or at least 50% of the total volume V1 of the first compartment.

8. A container according to any one of claims 1 to 7, **characterized** in that the first compartment comprises a water capture element having a volume V4.

9. A container according to any one of claims 1 to 8, **characterized** in that the drain opening is provided with a valve which is open in the upright position and closed when the container is tipped more than 50 degrees, more than 60 degrees, more than 70 degrees or more than 90 degrees.

10. A container according to any one of claims 1 to 9, **characterized** in that the flow rate through the bottom portion, when the container is tipped 95 degrees and when the container comprises a volume of ice melt water which is less than 10% of the volume V1, is less than 1 litres / minute.

11. A container according to any one of claims 1 to 10, **characterized** in that the container further comprises a displaceable ice pick, said ice pick being in the form of an elongated element having a length which is at greater than half of the height of the container or greater than half of the height of the first compartment.

12. A container according to any one of claims 1 to 11, **characterized** in that the container further comprises a displaceable lid, said lid having at least two positions, a first position where the lid closes the dispensing opening to prevent ice cubes stored in the container from leaving the container and a second position where the dispensing opening is open to allow ice cubes stored in the container to leave the container through the dispensing opening.

13. A container according to claim 12, **characterized** in that the container comprises a lid displacing mechanism, said lid displacing mechanism being arranged to displace the lid between the first and second positions and hold the lid the first and second positions.

14. A container according to claim 13, **characterized** in that the lid displacement mechanism comprises a hinge, said hinge connecting the lid in a pivotable manner to the container such that the lid can pivot between the first and second positions.

15. A container according to claim 11 and any one of claims 12 to 14, **characterized** in that the ice pick is attached to the lid.

16. A container according to claim 14 and 15, **characterized** in that the ice pick pivots together with the lid when the lid is displaced from the first to the second position.

17. A container according to claim 16, **characterized** in that the ice pick is arranged outside the container in both the first and second positions of the lid, such that a user of the container can pivot the ice pick to control the position of the lid.

18. A container according to claim 17, **characterized** in that the container comprises a handle offset from the outer surface of the container and in that the ice pick is arranged in a gap between between the outer surface of

the container and a surface of the handle which faces the outer surface of the container.

19. A container according to claim 11 or 15 **characterized** in that the ice pick is arranged inside the container.

20. A container according to claim 19, **characterized** in that the ice pick is arranged outside the first compartment.

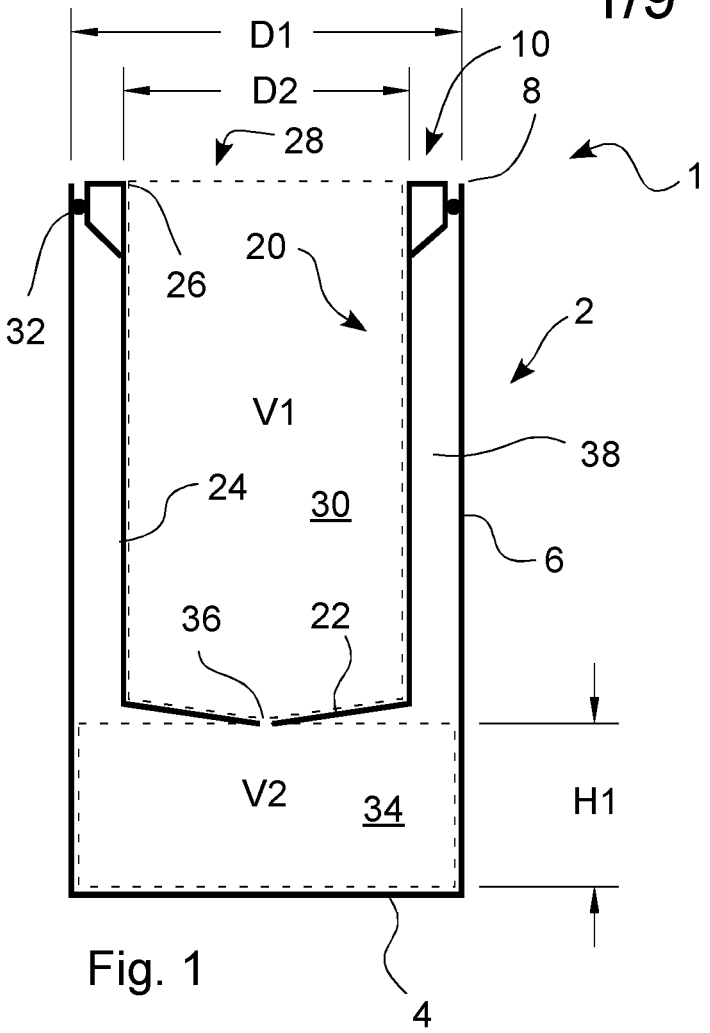


Fig. 1

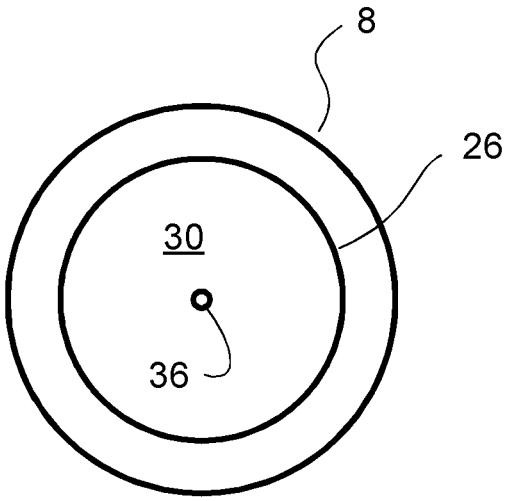


Fig. 2

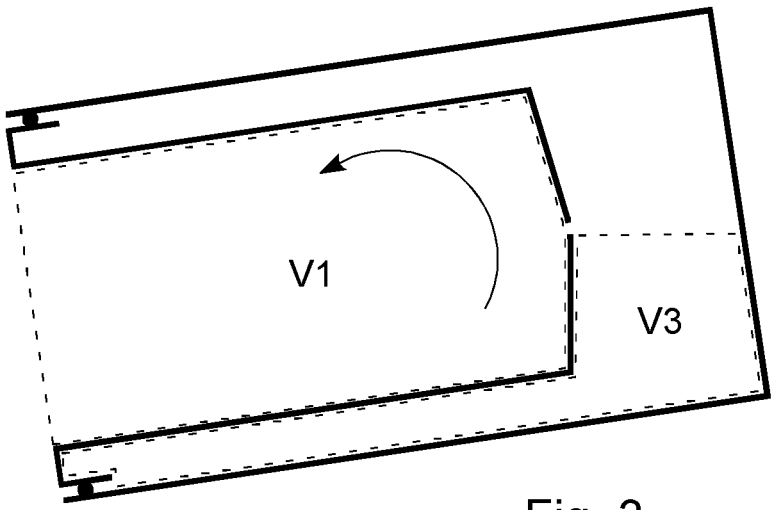


Fig. 3

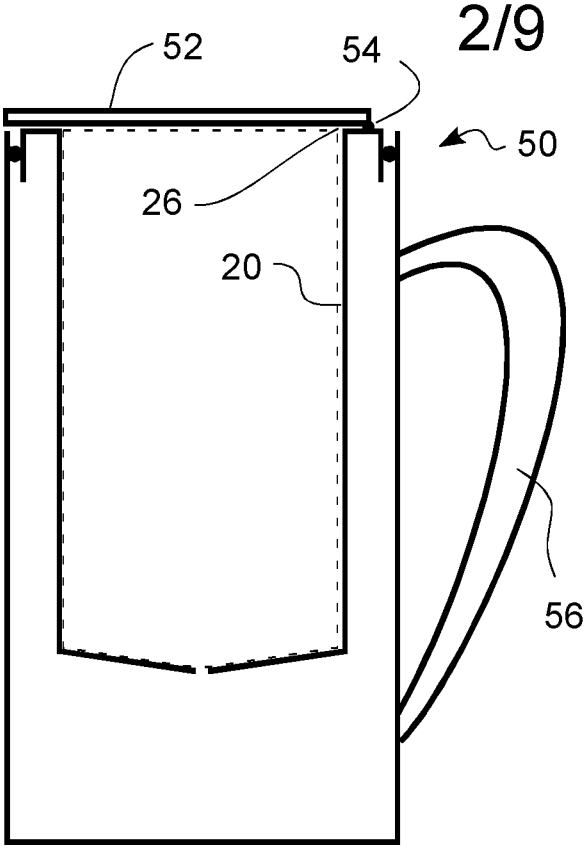


Fig. 4

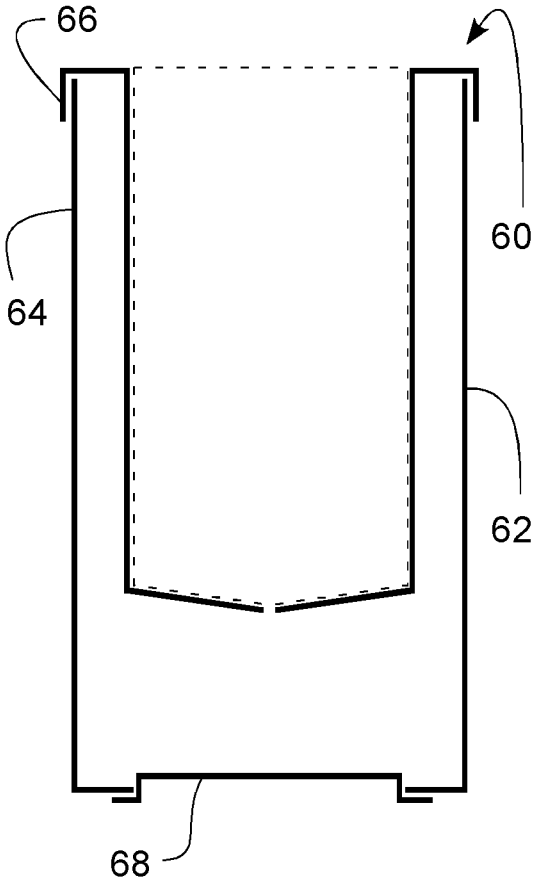


Fig. 5

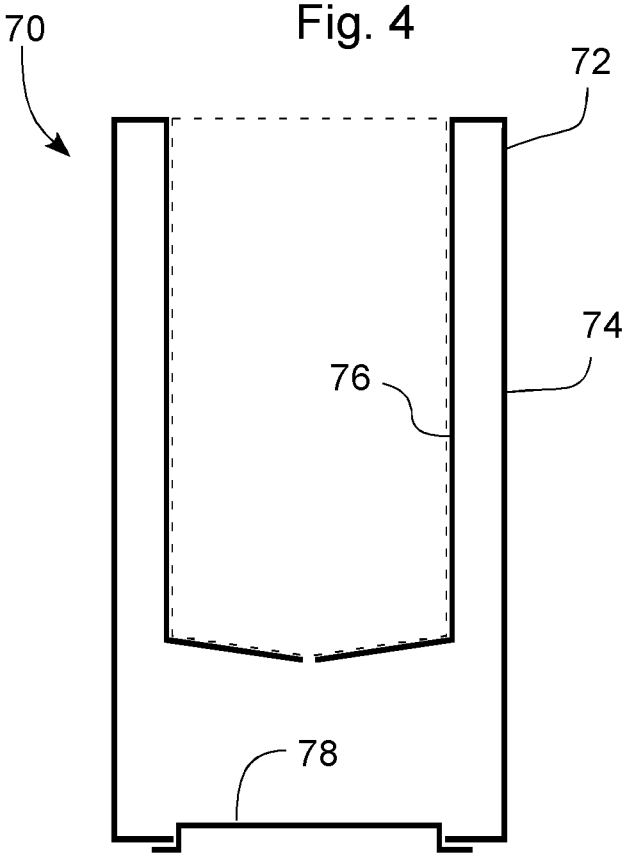


Fig. 6

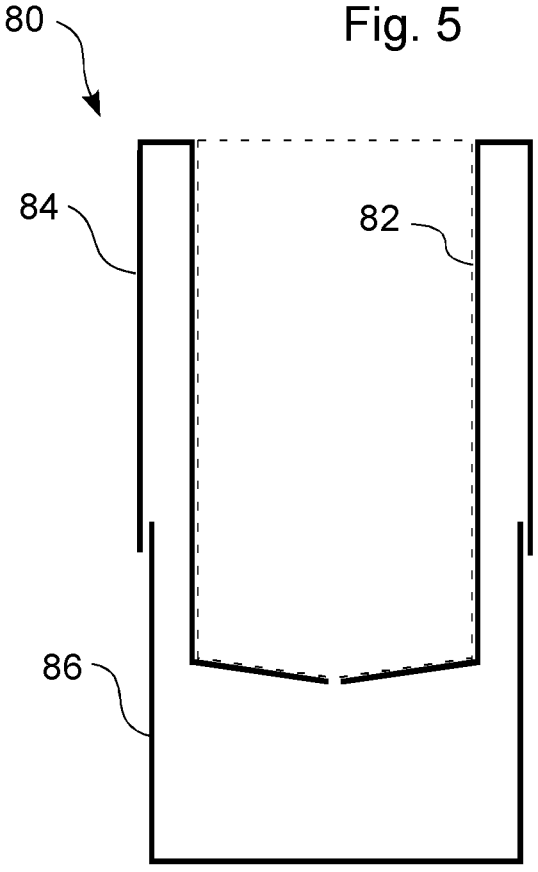


Fig. 7

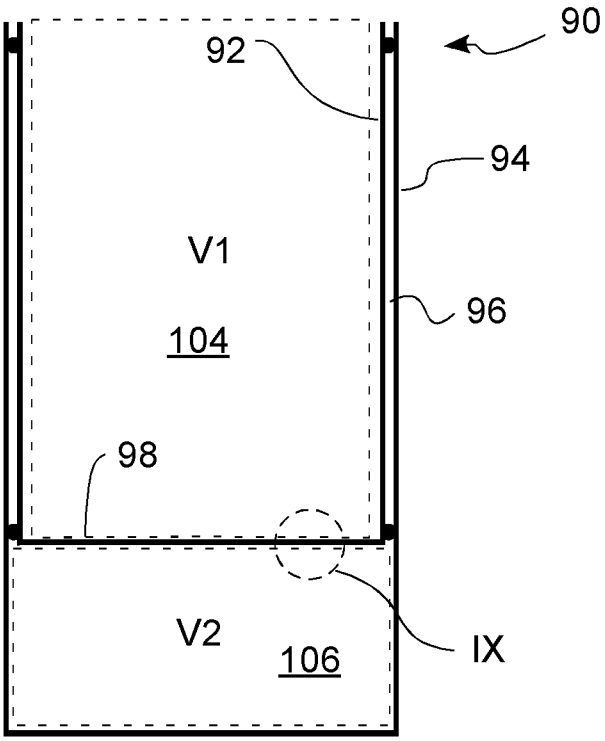


Fig. 8

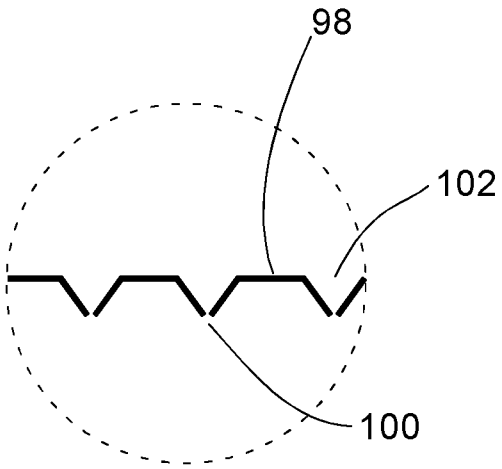


Fig. 9

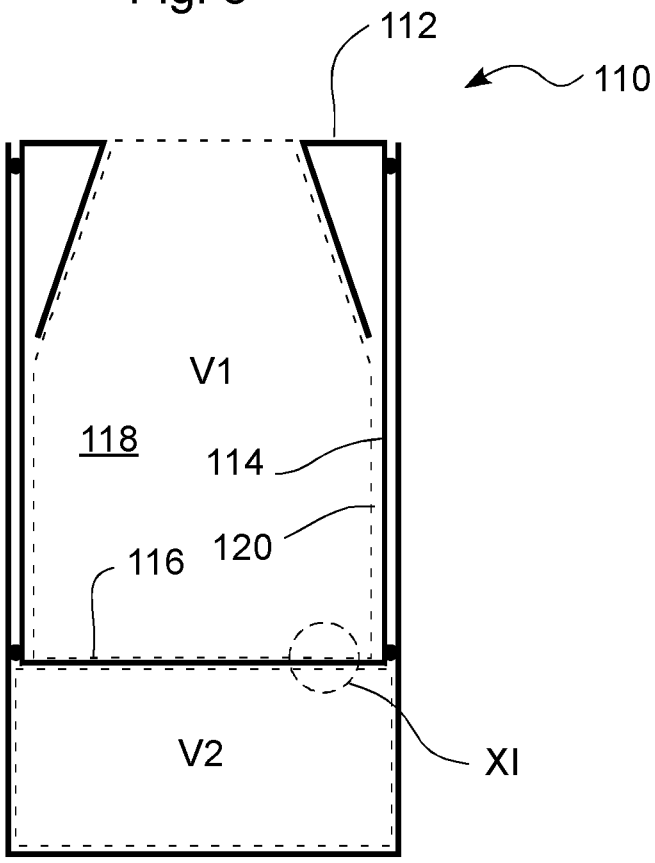


Fig. 10

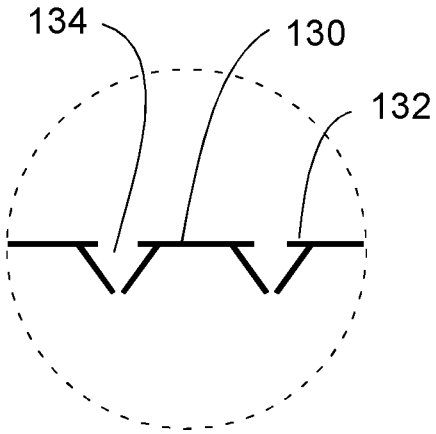


Fig. 11

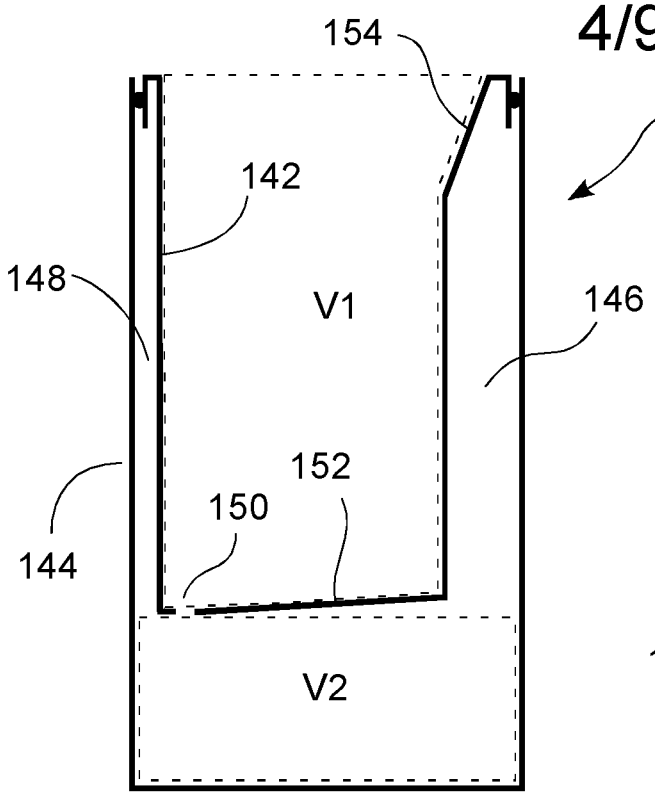


Fig. 12

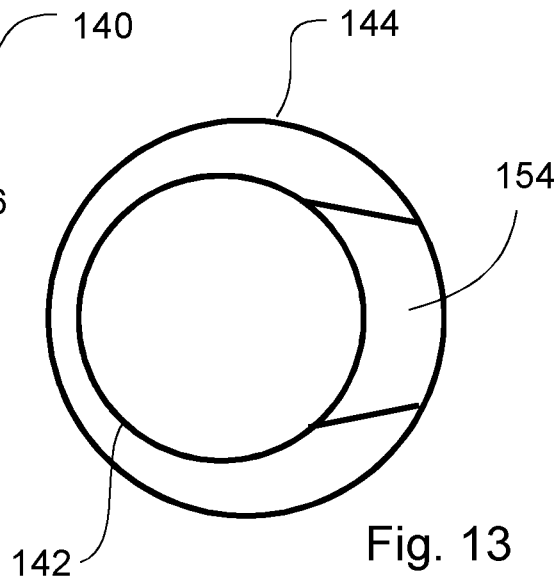
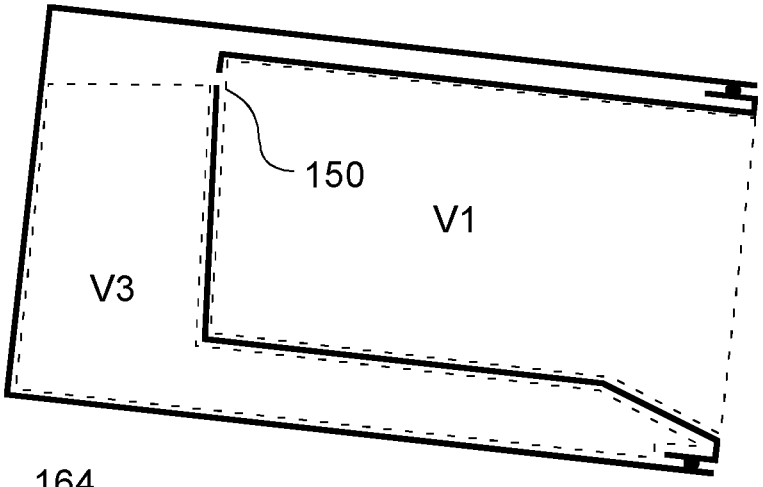


Fig. 13

Fig. 14



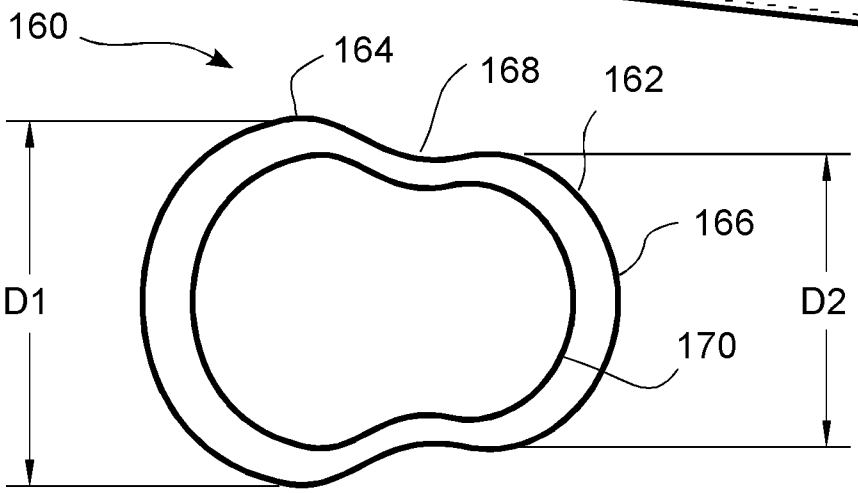


Fig. 15

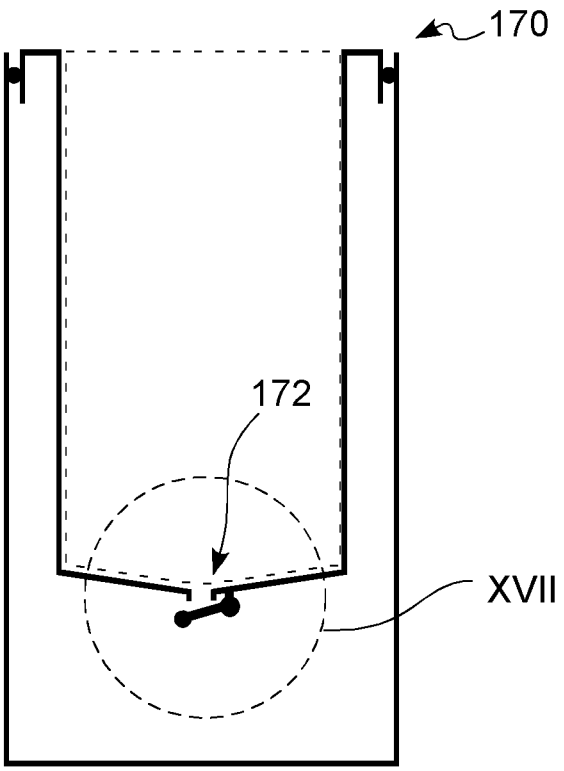


Fig. 16

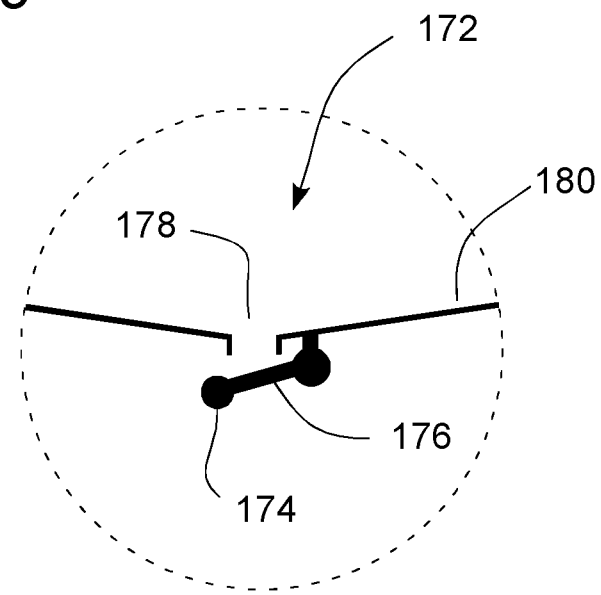


Fig. 17

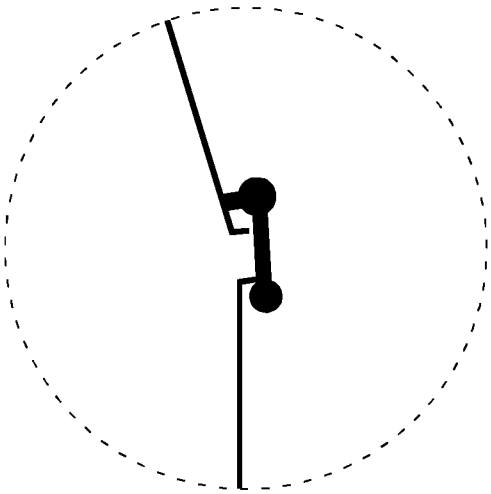


Fig. 18

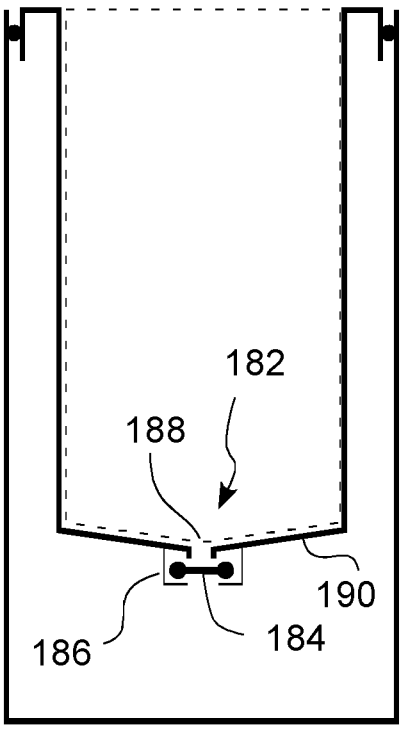


Fig. 19

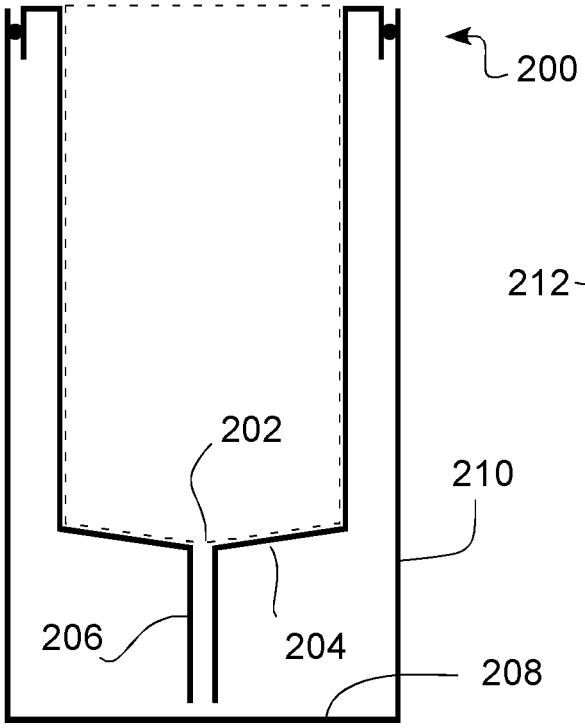


Fig. 20

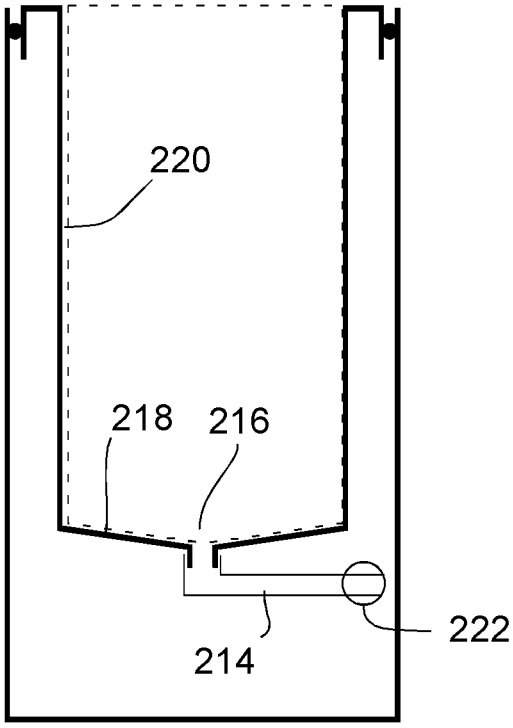


Fig. 21

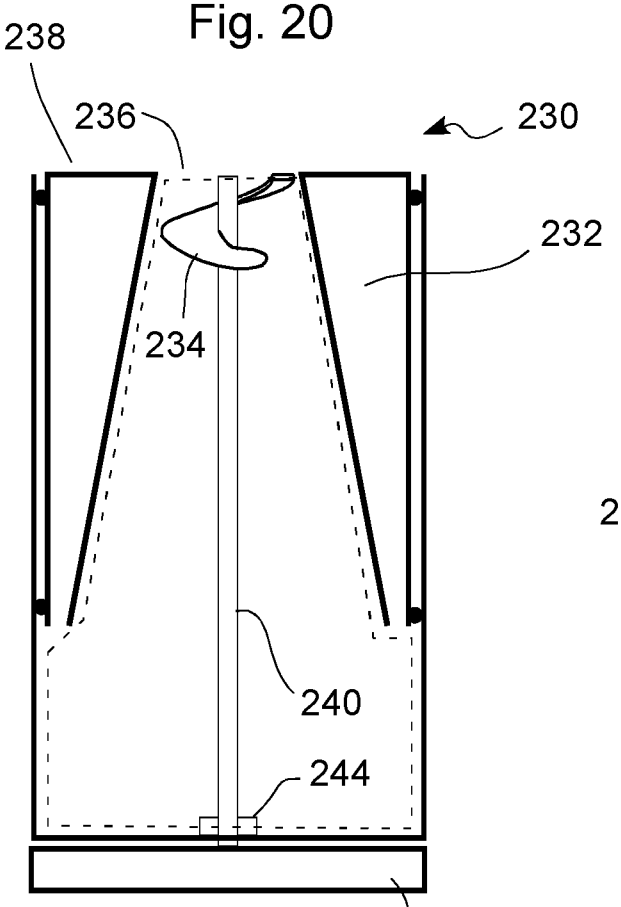


Fig. 22

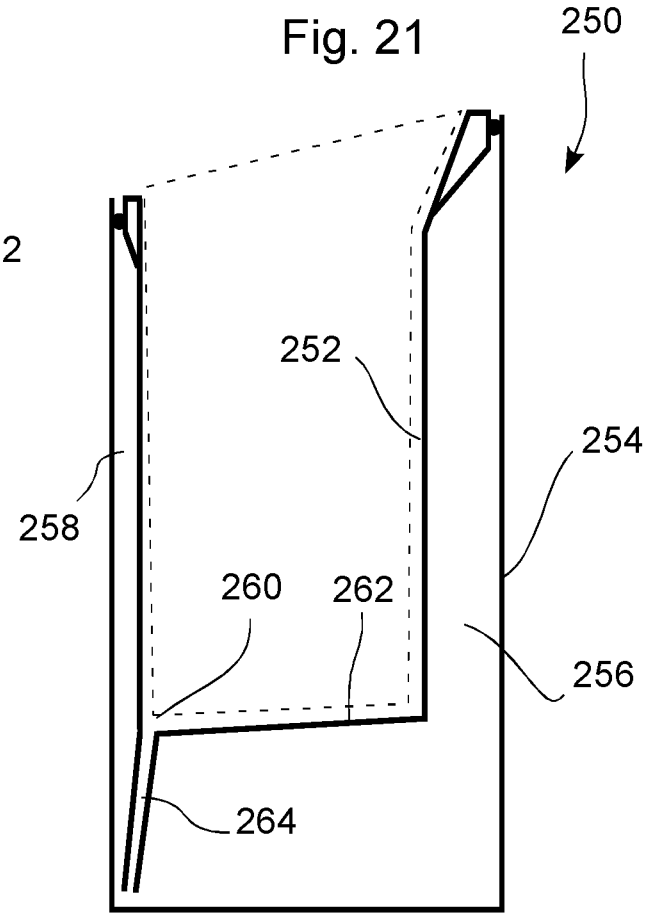


Fig. 23

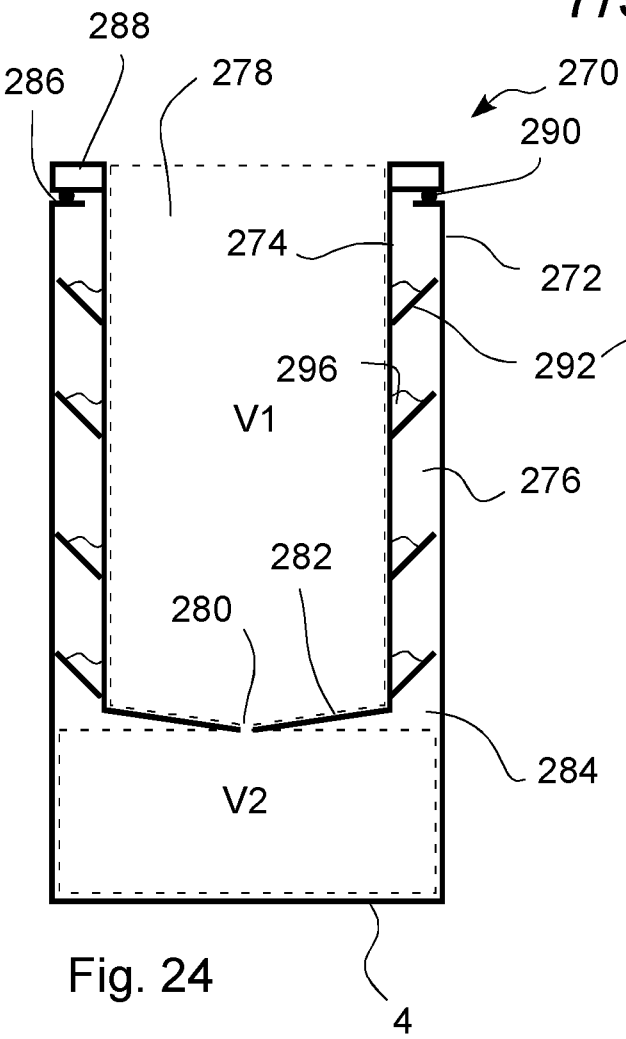


Fig. 24

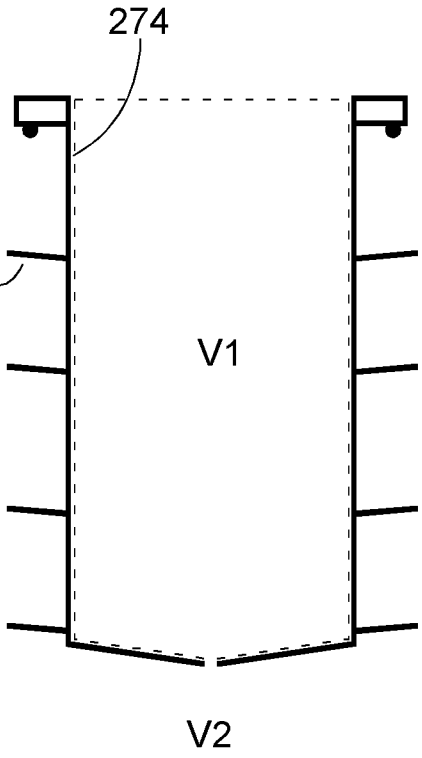


Fig. 25

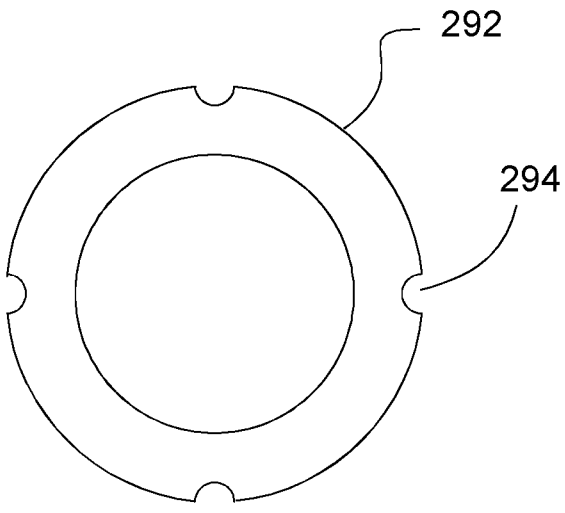


Fig. 26

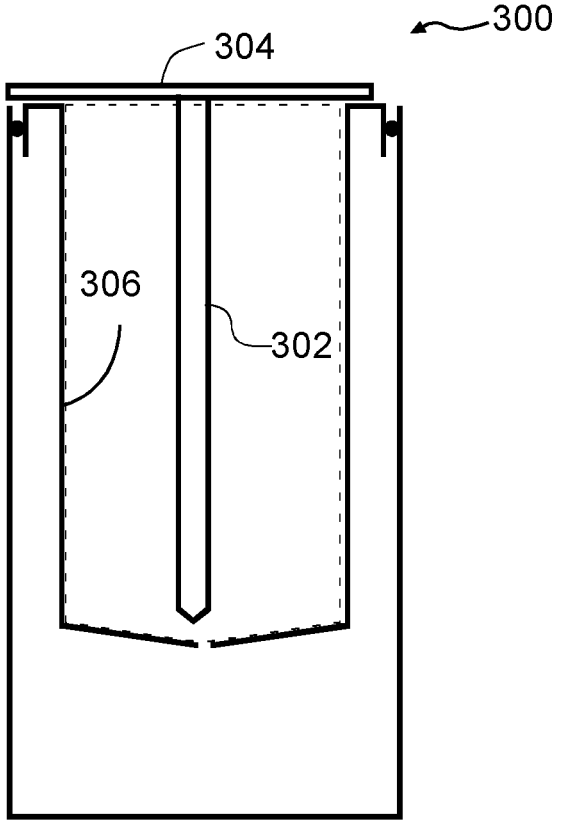


Fig. 27

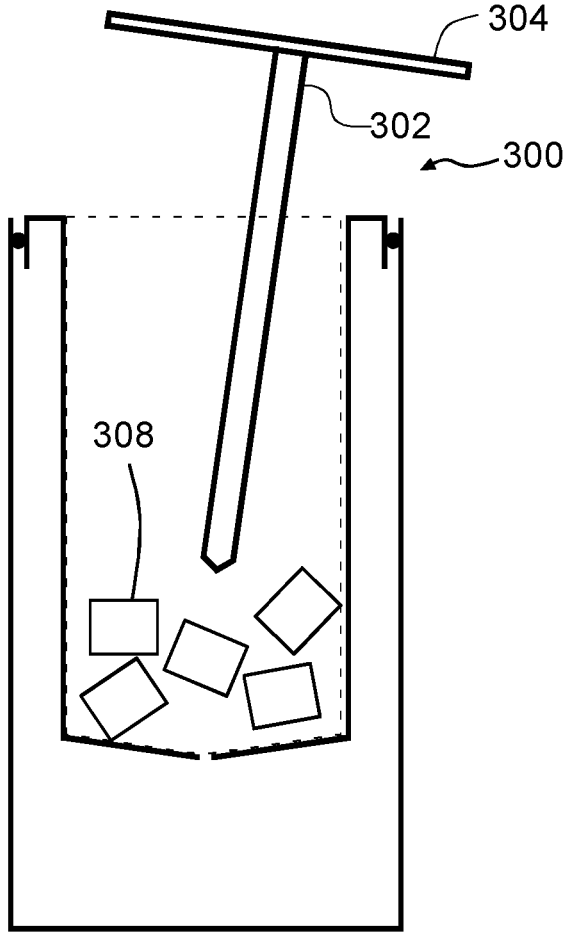


Fig. 28

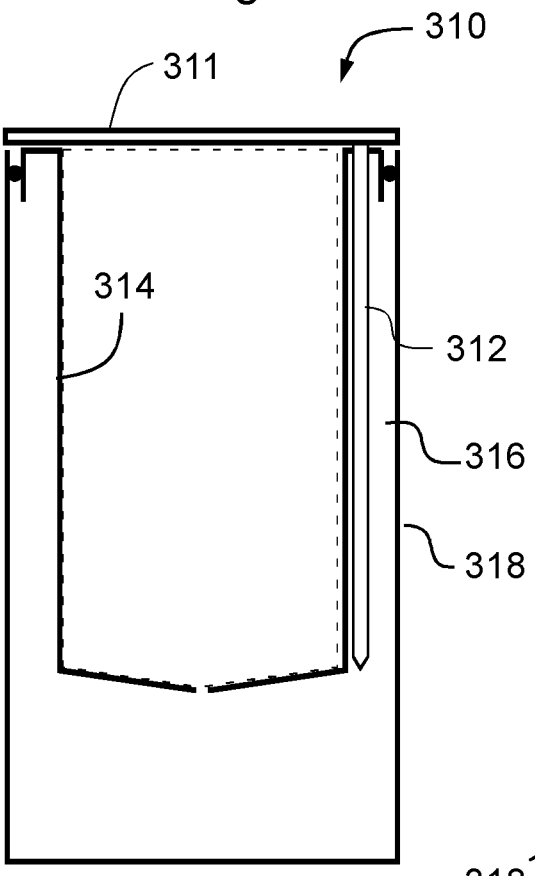


Fig. 29

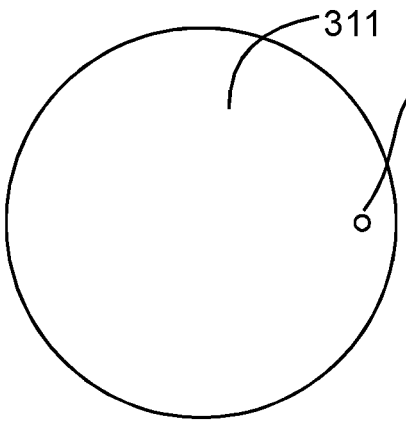


Fig. 30

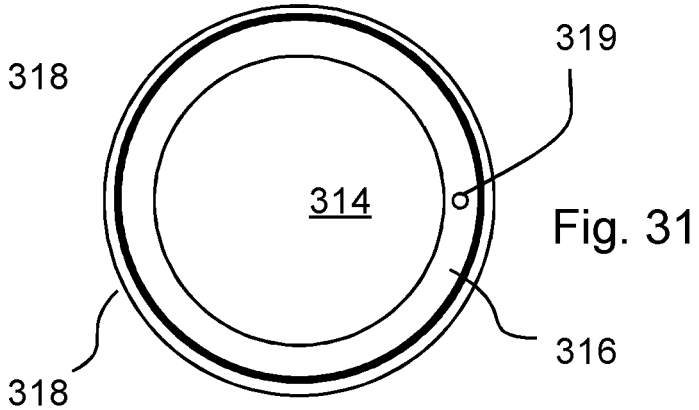


Fig. 31

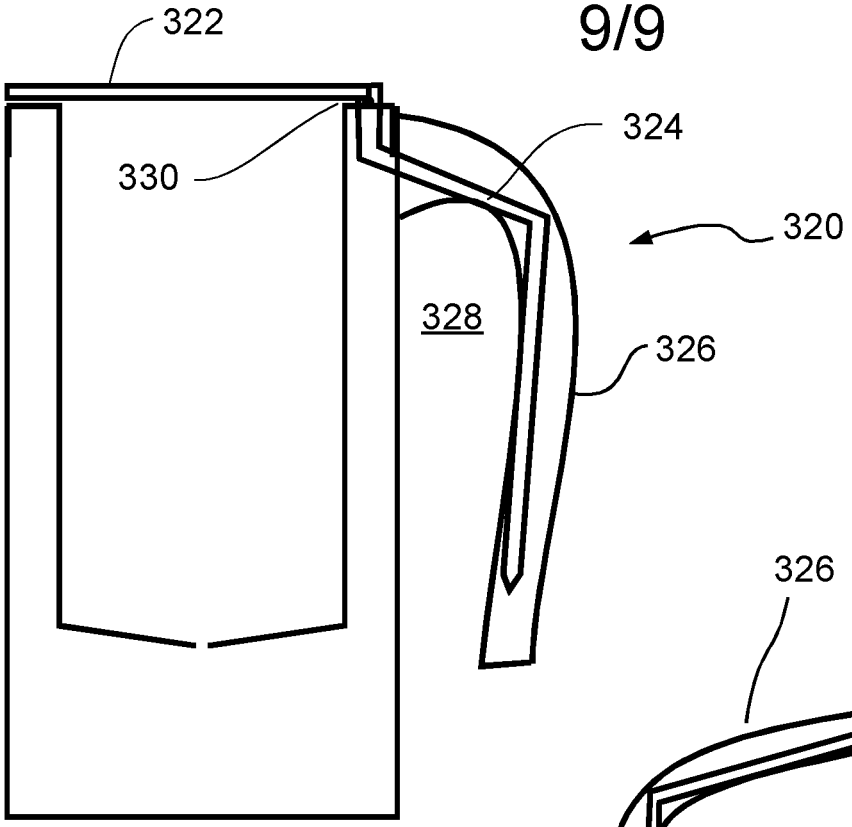


Fig. 32

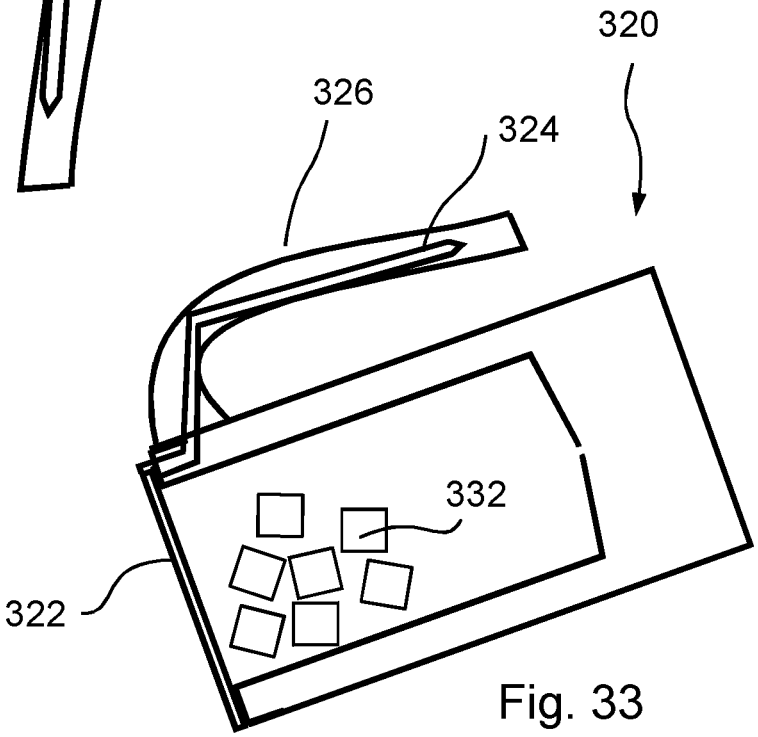


Fig. 33

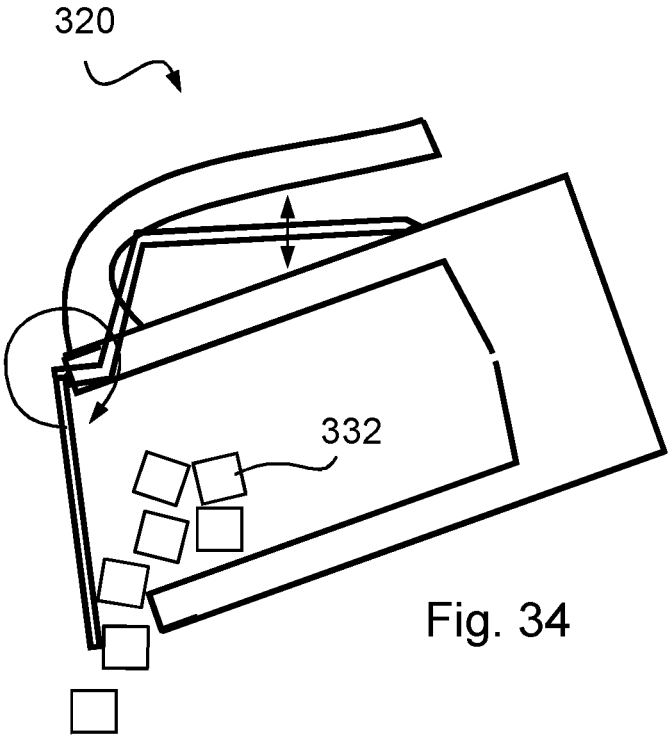


Fig. 34

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/059325

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D81/38 F25C5/182 F25C5/20 F25D3/08
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D F25C F25D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 2 762 203 A (SCHLUMBOHM P.) 11 September 1956 (1956-09-11) figures -----	1-10 11-20
X	US 1 447 035 A (JAMES RAGGIO ET AL) 27 February 1923 (1923-02-27) figures -----	1,2,4,5, 8
X	US 2013/221013 A1 (KOLOWICH J BRUCE [US] ET AL) 29 August 2013 (2013-08-29) figures -----	1-3,5,6
Y	JP S55 107076 U (UNKNOWN) 26 July 1980 (1980-07-26) figure 4 ----- -/--	11-20

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
9 July 2020	22/07/2020

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Vigilante, Marco

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 089 733 A2 (INVICTA PLASTICS LTD [GB]) 28 September 1983 (1983-09-28) the whole document	1-20
A	US 6 257 465 B1 (TREADWELL PAUL [US]) 10 July 2001 (2001-07-10) the whole document	1-20

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2020/059325

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 1447035 A	27-02-1923	NONE	
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