DEVICE FOR RAPID COOLING OF BEVERAGES

Vastardis

Applicant: BKON LLC, Newark, DE (US)

Inventor: Dean J. Vastardis, Moorestown, NJ (US)

Appl. No.: 14/448,218

Filed: Jul. 31, 2014

Related U.S. Application Data

Provisional application No. 61/860,588, filed on Jul. 31, 2013.

ABSTRACT

The present invention relates to a beverage chiller than can be used to rapidly cool beverages without the need for ice. The present invention also relates to a device for mixing beverages, i.e., a cocktail shaker, that does not require a cap. In one embodiment, the present invention is a lid for a beverage container. In one embodiment, the present invention is a device that can cool a beverage or beverage stream in a continuous, or nearly continuous manner, for example, the output of a coffee or tea brewing machine.
DEVICE FOR RAPID COOLING OF BEVERAGES

CROSS-REFERENCE TO RELATED APPLICATION


BACKGROUND OF THE INVENTION

[0002] Many beverages are best consumed when they are cooled to a temperature at or below room temperature. Beverages that need to be brewed at high temperatures, such as tea and coffee, are often more pleasing or are easier to drink when served cold. In addition, cocktails and other beverages often taste best when served cold.

[0003] There are a number of devices and methods that can be used to cool a beverage. However, there are often undesirable characteristics associated with these devices or methods. For example, ice can be added to the beverage in order to cool it, but the ice will dilute the beverage as it melts, which reduces the taste and quality of the beverage. A beverage can be cooled using some form of refrigeration. However, a beverage placed in a refrigerator or on ice in order to cool it can take a long time to reach the desired temperature, especially in the case of beverages that must be brewed at relatively high temperatures. A beverage container, such as a glass mug, can be cooled prior to adding a beverage to it, but this is often inefficient or ineffective at cooling the beverage.

[0004] Another method of cooling a beverage includes the use of a cocktail shaker. The patent literature contains a number of examples of previously described cocktail shakers. For example, U.S. Pat. Nos. 300,867; 324,173; 1,657,927; and 6,913,165 are variations of cocktail shakers that require ice to cool a beverage. When using such previously described cocktail shakers, a beverage or a number of beverage ingredients are added to the shaker along with ice. A cap is then placed on the cocktail shaker and the shaker is shaken to agitate the liquid inside in order to cool and mix the beverage. The beverage is then typically poured into a glass or other container. However, the beverage is often diluted from the ice melting and mixing with the beverage. In addition, pressurization often occurs during shaking, especially when the liquid is hot, which can cause the cap to come off. This can result in safety concerns for the person using the shaker, or can lead to undesirable spilling of the beverage.

[0005] Thus, there is a need in the art for a device that can rapidly cool a beverage without diluting the beverage, without resulting in pressurization inside the device, and/or without the need for the device to be completely sealed to avoid spillage. The present invention addresses this unmet need in the art.

SUMMARY OF THE INVENTION

[0006] The present invention relates to a device for cooling or mixing beverages. In one embodiment, the device comprises: a body comprising a base and a sidewall, wherein the body is configured to receive a lid, and wherein the base and the sidewall form a chamber suitable for holding a liquid; a lid having a first opening, wherein the lid can be removably connected to the body, a funnel connected to the lid, the funnel having a second opening; and a splash disk connected to the lid or the body, wherein when the lid is connected to the body, the splash disk is positioned directly beneath the funnel in the chamber; and wherein the first opening communicates with the second opening and the chamber when the lid is connected to the body, such that when a liquid enters the first opening, the liquid is directed through the funnel, through the second opening, and onto the splash disk. In another embodiment, the device of the present invention comprises a column extending from an interior surface of the base instead of a splash disk, wherein the liquid is directed onto the column. In various embodiments, the liquid is further directed by the splash disk or column onto the interior surface of the body, thereby cooling the liquid when the body is at a lower temperature than the temperature of the liquid entering the device.

[0007] In various embodiments, the device of the present invention may further comprise a vent or vent tube for allowing the pressure within said device to remain approximately equal to the pressure outside said device. In one embodiment, the lid comprises an aerating screen in communication with the first opening. In one embodiment, the device comprises an aperture for allowing a beverage to flow out of the device. In one embodiment, the device comprises an o-ring to form a seal between the lid and the base. In one embodiment, the device comprises at least one hand grip connected to the outside surface of said device. In one embodiment, at least a portion of the interior surface of the body comprises ridges or grooves. In one embodiment, the body of the device comprises aluminum.

[0008] In another embodiment, the device of the present invention is a lid for a beverage container comprising: a body, the body having a first opening, a funnel connected to the body, the funnel having a second opening; a splash disk connected to the body, wherein the splash disk is positioned directly beneath the funnel; wherein the first opening communicates with the second opening and the chamber, such that when a liquid enters the first opening, the liquid is directed through the funnel, through the second opening, and onto the splash disk; and a means for connecting the body to a beverage container, wherein a liquid-tight seal is formed between the body and the beverage container when the body is connected to the container. In one embodiment, the lid further comprises a vent or vent tube. In one embodiment, the lid further comprises an aerating screen in communication with the first opening.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The following detailed description of preferred embodiments of the invention will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there are shown in the drawings embodiments which are presently preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities of the embodiments shown in the drawings.

[0010] FIG. 1 is a cross-sectional illustration of a beverage cooling device, according to one embodiment of the present invention.

[0011] FIG. 2 is a cross-sectional illustration of a beverage cooling device, according to one embodiment of the present invention, wherein the vent tube is positioned within the top of the lid.
FIG. 3 is a cross-sectional illustration of a beverage cooling device, according to one embodiment of the present invention, wherein the funnel includes at least one vent hole instead of a vent tube.

FIG. 4 is a cross-sectional illustration of a beverage cooling device, according to one embodiment of the present invention, wherein the device has a splash disk instead of a column extending from the base.

FIG. 5 is a cross-sectional illustration of a beverage cooling device, according to one embodiment of the present invention, wherein there is an aperture in the base.

FIG. 6 is a cross-sectional illustration of a beverage cooling device, according to one embodiment of the present invention, wherein grips are attached to the outer surface of the device.

FIGS. 7 and 8 are cross-sectional illustrations of a portion of a beverage cooling device, depicting exemplary embodiments of interior surface features.

DETAILED DESCRIPTION

It is to be understood that the figures and descriptions of the present invention have been simplified to illustrate elements that are relevant for a clear understanding of the present invention, while eliminating, for the purpose of clarity, many other elements found in beverage containers or beverage cooling devices. Those of ordinary skill in the art may recognize that other elements and/or steps are desirable and/or required in implementing the present invention. However, because such elements and steps are well known in the art, and because they do not facilitate a better understanding of the present invention, a discussion of such elements and steps is not provided herein. The disclosure herein is directed to all such variations and modifications to such elements and methods known to those skilled in the art.

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. Although any methods, materials and components similar or equivalent to those described herein can be used in the practice or testing of the present invention, the preferred methods and materials are described.

As used herein, each of the following terms has the meaning associated with it in this section.

The terms “a” and “an” are used herein to refer to one or to more than one (i.e., to at least one) of the grammatical object of the article. By way of example, “an element” means one element or more than one element.

“About” as used herein when referring to a measurable value such as an amount, a temporal duration, and the like, is meant to encompass variations of ±20%, ±10%, ±5%, ±1%, or ±0.1% from the specified value, as such variations are appropriate.

The terms “beverage,” “liquid,” and the like, are used interchangeably herein, and refer to any ingredient, or mixture of ingredients, that can be consumed by a person via drinking.

Throughout this disclosure, various aspects of the invention can be presented in a range format. It should be understood that the description in range format is merely for convenience and brevity and should not be construed as an inflexible limitation on the scope of the invention. Accordingly, the description of a range should be considered to have specifically disclosed all the possible subranges as well as individual numerical values within that range. For example, description of a range such as from 1 to 6 should be considered to have specifically disclosed subranges such as from 1 to 3, from 1 to 4, from 1 to 5, from 2 to 4, from 2 to 6, from 3 to 6 etc., as well as individual numbers within that range, for example, 1, 2, 2.7, 3, 4, 5, 5.3, 6 and any whole and partial increments therebetween. This applies regardless of the breadth of the range.

Description

The present invention relates to devices and methods for cooling liquids. In various embodiments, the devices and methods of the present invention can be used to quickly cool a hot beverage, such as tea or coffee, without diluting the beverage with ice. The present invention solves the problem of cooling a beverage without adding ice, or some other cold or frozen material to the beverage, by directing liquid towards the sidewall of the device as the liquid is poured into the device. In one embodiment, the device can be pre-cooled prior to pouring or draining liquid into the device, thereby chilling the sidewall and other portions of the device to a low temperature, i.e., a temperature lower than room temperature. Further, in one embodiment, the device of the present invention relates to a cocktail shaker that does not require a cap to prevent the spilling of the beverage when shaking the device.

Referring now to the drawings, FIG. 1 is an illustration of a chiller 10 according to one embodiment of the present invention. Chiller 10 comprises a body 11 (having a sidewall 13 and a base 14) and a lid 20. In a preferred embodiment, body 11 is cylindrical in shape. A column 12 extends from the center of base 14 in the interior chamber formed within body 11. Column 12 can be connected to base 14 via a screw 15, or by some other means. Alternatively, body 11, including sidewall 13 and base 14, and column 12 can be one piece, i.e., it is fabricated from a single piece of metal or other material.

Lid 20 comprises an opening 21, an aeration screen 22, a vent tube 24, and a funnel 26. Lid 20 can be affixed to body 11 by any means as would be understood by a person skilled in the art, including, but not limited to, a tongue and groove connection, a threaded connection, a flange, a friction fit connection, or a snap fit connection. Chiller 10 may also comprise a gasket 28, such as an O-ring or some other type of seal, for improving the seal between lid 20 and body 11.

Liquid that enters first opening 21 can flow through aeration screen 22 into the interior cavity within funnel 26 and then out of funnel 26 via a second opening 29. Accordingly, when lid 20 is affixed to body 11, a liquid entering opening 21 can flow into the interior chamber within body 11 and be contained within the chamber within body 11.

A beverage may be cooled by using chiller 10 as follows. A liquid is poured or drained into chiller 10 through opening 21 in lid 20. The liquid flows through aeration screen 22, then through funnel 26, and onto the top of column 12. The liquid will then be deflected towards the inner surface of sidewall 13 in all, or nearly all, directions and run down sidewall 13 towards base 14, where it collects inside chiller 10. The cooling of a liquid through the use of chiller 10 primarily occurs as the liquid contacts the sidewall 13. By deflecting the flow of liquid with the top of column 12, the device causes liquid to flow in relatively thin sheets or streams down the inner surface of the body. The nature of the liquid flowing in thin sheets or streams thereby increases the amount of contact between the bulk of the liquid and sidewall 13. In other words, a significant portion of the liquid will come into direct contact with sidewall 13 merely by pouring or draining
the liquid into opening 21, instead of requiring excessive shaking or agitation as is required when using cocktail shakers known in the art. It is contemplated herein that the liquid entering opening 21 is at a significantly higher temperature than sidewall 13 and/or other components of the device of the present invention. Therefore, heat will be transferred from the liquid to the device, therebycoolingthe liquid.

 Accordingly, chiller 10 may comprise a material that conducts heat efficiently. In one embodiment, chiller 10 comprises a type of metal. In one embodiment, chiller 10 comprises aluminum. In one embodiment, chiller 10 comprises a grade of stainless steel suitable for contact with food. In another embodiment, chiller 10 can comprise a polymer, for example a polymer with suitable heat transfer characteristics. Chiller 10 can be cooled prior to adding a liquid to the chiller. For example, chiller 10 can be stored inside a freezer or refrigerator until it is needed for use. Alternatively, other cooling mechanisms may be used to cool the chiller, such as applying ice or cooling pads to the outside of the device. Cooling chiller 10 prior to, or during, use can improve the cooling efficiency of the chiller, or enable a liquid to be cooled to a relatively low temperature.

 In various embodiments, the top of column 12 comprises a shape and size suitable for deflecting a liquid towards sidewall 13 of chiller 10. In one embodiment, the top of column 12 is substantially flat. In another embodiment, the top of column 12 is pointed or curved to optimize the deflection characteristics of the column. In yet another embodiment, the top of column 12 can be shaped and/or sized differently than the other portions of column 12. For example, in one such embodiment, the top of column 12 can comprise a substantially spherical or ball-shaped portion. Further, in one embodiment, the shape or size of column 12 can vary over a significant portion of column 12. For example, in one such embodiment, column 12 can be shaped such that the diameter or width of the column increases or decreases between the top and the base, i.e., column 12 is substantially in the shape of a pyramid or cone. However, column 12 or the top of column 12, i.e., the portion of column 12 used to deflect liquid to sidewall 13, is not limited to any specific embodiment described herein, and can be any shape or size as would be understood by a person skilled in the art.

 In one embodiment of the device of the present invention, lid 20 comprises vent tube 24 which allows gas or vapor to escape from the inside of chiller 10 through opening 21. In one embodiment, vent tube 24 in lid 20 is a relatively small diameter tube positioned within funnel 26. As a liquid is poured or drained into chiller 10 through opening 21, the liquid will continue to flow through opening 29 in funnel 26 into the chamber within chiller 10. As the liquid fills the chamber, any pressure generated can be released via vent tube 24 back through a retaining screen 22 and through opening 21 to the surrounding atmosphere. Accordingly, vent tube 24 serves the function of maintaining pressure equilibrium between the chamber within the chiller and the environment outside of the chiller, thereby preventing back pressure from building up inside the chiller which could interfere with the flow patterns within the chiller. Additionally, any gas or vapor generated as the liquid or beverage entering the chiller is cooled and aerated may be expelled through vent tube 24.

 In one embodiment, vent tube 24 may be positioned somewhere other than within funnel 26. For example, referring to FIG. 2, vent tube 24 may be positioned within the top wall of lid 20 to allow gas or vapor to escape from the inside of chiller 10. In one embodiment, vent tube 24 may be an aperture or channel that is formed within the wall of lid 20. In another embodiment, vent tube 24 may be a tube, valve, or some other type of venting means that is inserted into a hole or channel in the wall of lid 20, or in funnel 26 of lid 20. In one embodiment, vent tube 24 may be angled, or otherwise shaped in such a manner so as to reduce the potential for liquid to leak out of the chiller, for example while shaking the chiller. In one embodiment, vent tube 24 may further comprise a flap, plug, or valve mechanism that can be used to close or cover the vent tube to prevent liquid from leaking out of the chiller. In another embodiment, vent tube 24 can comprise a screen or a mesh to minimize or prevent liquid from leaking out of the chiller.

 Referring to FIG. 3, in one embodiment, funnel 26 of chiller 10 comprises at least one vent hole 27. The at least one vent hole 27 can be used in place of, or in addition to, a vent tube for the purpose of venting excess gas or vapor from the chiller. The at least one vent hole 27 can be sized, shaped, and/or positioned appropriately to minimize the amount of liquid entering the hole when the liquid is poured or drained through the funnel, while preferably allowing excess gas or vapor to readily escape from the chiller.

 In one embodiment of the present invention, body 11 does not have a column extending from the base. Referring to FIG. 4, chiller 10 without a column extending from the base of body 11 is shown. In this embodiment, the liquid is directed towards the interior surface of the sidewall of body 11 via a splash disk 30. Splash disk 30 is a disk that is positioned beneath funnel 26 to serve the same function as the top of the column in other embodiments. Splash disk 30 can be connected to lid 20 or funnel 26 by way of one or more connector rods 32. By using splash disk 30 instead of a column extending from the base of body 11, more space is provided within the interior chamber of chiller 10.

 The splash disk of the present invention may comprise any size or shape suitable for directing liquid to the inside surface of body 11. For example, the splash disk may comprise the shape of a circle, oval, square, triangle, or any other shape as would be understood by a person of ordinary skill. The shape of the splash disk may be similar or identical to the cross-sectional shape of the body. Alternatively, the shape of the splash disk may be significantly different from the shape of the body. Further, the splash disk may be substantially flat, as shown in FIG. 4, or the splash disk may be curved or otherwise shaped such that the height of the center of the splash disk may be higher or lower than the outer edges of the splash disk. Further still, the splash disk may be sized such that the size of the gap between the outer edge of the splash disk and the interior surface of the body is relatively small. Alternatively, the gap between the outer edge of the splash disk and the interior surface of the body may be relatively large, as shown in FIG. 4. A narrow or small gap may improve cooling of the liquid by causing the liquid flowing over and around the splash disk to form a relatively thin sheet, thus increasing the amount of contact between the liquid and the inner surface of the body. However, a larger gap may be desired in order to prevent liquid from being restricted in flowing over and around the splash disk, i.e., in order to prevent the liquid from "backing up." Similarly, the distance between the splash disk and opening 29 in funnel 26 may vary, and can be any distance that would be suitable for directing liquid as described herein.
In addition, having splash disk 30 as the means for directing the liquid towards the sidewalls of body 11 enables all of the liquid-directing components of the present invention to be connected to lid 20. Accordingly, in one embodiment, the device of the present invention is a lid 20 that can be configured to fit any base. For example, lid 20 of the present invention can be adapted to fit onto the base of a cocktail shaker previously known in the art, or any other type of beverage container, such as a cocktail glass. In such an embodiment, lid 20 may comprise a connection means that enables the lid to be attached to the base or container, and forms a relatively tight seal between the lid and base or container. Such a connection means may be a flange or any other connection means that would connect the bottom of the lid to the brim of a container, as would be understood by a person skilled in the art.

In another aspect of the present invention, chiller 10 can be used as a cocktail shaker without the need to place a cap over opening 21. Chiller 10 can be used without a cap while being substantially spill- or leak-proof. Referring again to FIG. 4, once liquid is added to chiller 10 through opening 21, the chiller can be shaken to agitate the liquid within the chiller. As the liquid is agitated, aeration screen 22 prevents liquid from escaping chiller 10, but nonetheless allows gas or vapor to escape. Accordingly, aeration screen 22 may comprise a relatively fine mesh that allows liquid to flow through with sufficient pressure, for example the amount of pressure provided by the force of gravity, but it prevents liquid droplets from escaping the chiller 10 during agitation by dissipating the droplets as they hit aeration screen 22. The lack of a need for a cap on chiller also improves the cooling ability of the chiller. When a beverage is being shaken in chiller 10, heat and/or steam can escape out of opening 21 as described herein, thereby allowing the liquid remaining inside the chiller to cool more quickly.

Further, in one embodiment, liquid can also substantially prevented from escaping or spilling out of chiller 10 during use because of the relatively small size of opening 29. In funnel 26, most of the liquid inside chiller 10 will contact the outer surface of funnel 26 during agitation instead of entering opening 29. Further still, in embodiments of the device of the present invention featuring a splash disk, the bottom surface of the splash disk can substantially prevent liquid being agitated in chiller 10 from readily entering opening 29. In such an embodiment, liquid being agitated or shaken in chiller 10 can generally strike the bottom surface of the splash disk instead of entering opening 29. Similarly, in embodiments featuring a column instead of splash disk, as shown in FIG. 1, the column can serve to direct liquid away from opening 29. In one embodiment, any liquid entering funnel 26 through opening 29 can be readily deflected by aeration screen 22 instead of being expelled straight out of the chiller through opening 21.

Further, in one embodiment, chiller 10 can otherwise be used as a cocktail shaker similarly to cocktail shakers known in the art. Referring to FIG. 3, for example, lid 20 can be removed so that solid ingredients can be added to the chamber within body 11. The solid ingredients can include ice if the chiller 10 has not been chilled by another means prior to use. All of the liquid ingredients can also be added to the chiller with the lid off. Lid 20 can then be connected to base 11 and the ingredients can be shaken to mix and/or cool the ingredients to create the desired beverage.

Referring to FIG. 5, another embodiment of chiller 10 is shown. In this embodiment, body 11 has an aperture 18 in the bottom or base 14. Base 14 comprises angled portions that allow the liquid poured into chiller 10 to drain directly out of body 11. Such an embodiment of chiller 10 can be used for continuous chilling of a beverage stream, or for chilling multiple portions of a beverage one after another without the need to pour the chilled beverage out of the chiller after each portion is chilled. For example, such an embodiment of chiller 10 can be positioned beneath the outlet of a teapot or coffee brewer, such that after an individual portion of a beverage is brewed, it can be drained from the brewer directly into chiller 10, where it is chilled, and then the chilled beverage is immediately drained into a container via aperture 18 for serving.

Aperture 18 can be sized appropriately to create the desired residence time of the beverage inside the chiller 10, as would be understood by a person skilled in the art. For example, in one embodiment, a relatively small aperture can be used to cause a beverage to remain inside of chiller 10 for a relatively long period of time, thereby increasing the time to allow the beverage to cool by contacting the surfaces within the chiller. In one embodiment, chiller 10 can include more than one aperture. For example, in an embodiment of chiller 10 including a column (such as the embodiment of chiller 10 shown in FIG. 1), chiller 10 can comprise a plurality of apertures in base 14 around the column instead of a single aperture in the center of base 14.

Further, a cooling means may be applied to the chiller to keep the chiller cold, or at a relatively constant temperature, while being used in a substantially continuous manner. For example, ice may be applied to the outside of chiller 10 via an ice bath or sleeve. Alternatively, a refrigeration unit, or any other means as would be understood by a person skilled in the art, can be used to maintain the chiller at a relatively cold temperature during the continuous operation described herein.

Referring to FIG. 6, an embodiment of chiller 10 is shown wherein chiller 10 comprises a plurality of grips 40. Grips 40 may be used to decrease the potential for chiller 10 to be dropped while the user is shaking the chiller, or to protect the user's hands from cold surfaces when the chiller has been stored in a freezer or refrigerator. Grips 40 may comprise rubber, silicone, or some other material that would be useful for improving the ability to hold chiller 10, as would be understood by a person skilled in the art. Similarly, grips 40 may comprise a material that serves to insulate the potentially cold surfaces of the chiller from a user's hands. Further, grips 40 may comprise any shape that may improve the ability to grip or hold chiller 10. Grips 40 may be connected to chiller 10 by way of a tongue in groove fitting, or any other means known in the art. Each grip can cover a region or band of the chiller around the entire circumference of the outside surface of the chiller. Alternatively, grips 40 can cover only a portion of the circumference of the chiller.

The chiller of the present invention can comprise various materials. As described herein, in one embodiment, any surface of the chiller that a beverage will contact preferably comprises a heat-conductive material. In one embodiment, the chiller of the present invention comprises a metal, such as stainless steel or aluminum. In another embodiment, the chiller comprises a non-metal heat-conductive material. In one embodiment, the chiller may comprise a polymer, such as silicone or polytetrafluoroethylene (PTFE). Some parts of
the chiller may operate more optimally when they comprise materials other than a metal, for example, o-ring 28, aeration screen 22, vent tube 24, and grips 40. In one embodiment, at least a portion of the chiller of the present invention can be coated with a material to improve resistance to corrosion, for example when the chiller will be used with acidic beverages. In such an embodiment, the coating can be a polymer, ceramic material, or any other suitable material as would be understood by a person skilled in the art.

[0045] In one embodiment, the sidewall, base, and/or column of the body of the chiller may be solid, for example solid aluminum. In another embodiment, the sidewall, base, and/or column of the body of the chiller may be hollow, wherein the cavity within the sidewall, base, and/or column contains a material, such as a gel, that provides efficient heat transfer. In one embodiment, the body of the chiller is substantially cylindrical in shape. However, the chiller may be any shape as would be understood by a person skilled in the art, such as substantially spherical, substantially square, rectangular, tri- angular, or a tapered cylinder.

[0046] In one embodiment, the interior surface of the device of the present invention is substantially smooth. In another embodiment, at least a portion of the interior surface of the device may comprise ridges, baffles, grooves, or other features that increase the surface area of the interior surface, as would be understood by a person skilled in the art. In one embodiment, the surface features run primarily longitudinally, i.e., from the base towards the top of the chiller. In another embodiment, the surface features run primarily laterally, i.e., the features run substantially around the interior circumference of the chiller. In yet another embodiment, the chiller can comprise both longitudinal and lateral surface features. By increasing the relative surface area of the interior surface, the device can more efficiently cool a beverage by increasing the amount of contact between the beverage and the surface of the device.

[0047] Referring to FIG. 7, in one embodiment, body 11 of the chiller has step-like features 45 patterned laterally into the interior surface. FIG. 7 is a cross-sectional view of the side of the body of the chiller, wherein the circumference of the body tapers to its smallest size at the base of the chiller. The step-like features of such an embodiment can improve the cooling efficiency of the chiller by slowing the flow of the liquid as it runs down the sidewall, and by generally increasing the amount of sidewall surface area for the liquid to come in contact with. In one embodiment, body 11 may feature a step-like pattern on the interior surface without having the body's size being tapered.

[0048] In another embodiment, the interior surface of the device may be “star-shaped,” i.e., the surface has relatively large ridges extending from the base. Referring to FIG. 8, a cross-sectional, top-down view of the body of the chiller featuring such a “star-shape” is shown, wherein ridges 50 have been patterned into the interior surface of the body. In various embodiments, ridges 50 may be of any size and any number, as would be understood by a person skilled in the art. For example, in one embodiment, the interior surface of body 11 may comprise only one ridge, but body 11 may also comprise 2, 3, 4, 5, 6, 8 10, 20, or more ridges. In one embodiment, ridges 50 may be very small as compared to the general thickness of body 11, i.e., resembling shallow grooves within the surface of the body. In another embodiment, the ridges may be relatively large, i.e., they extend substantially far from the surface of body 11. Further, ridges can extend longitudinally from the base, as shown in FIG. 8, or ridges can be patterned laterally in the surface of body 11, similarly to the step-like features shown in FIG. 7.

[0049] In various embodiments, the size of the various components of the chiller of the present invention can be any size or dimension that would be suitable for chilling beverages, either in single servings, or on an industrial-sized scale, as would be understood by a person skilled in the art. In one embodiment, the sidewall and/or base of the body of the chiller can be about one-eighth to one-half inch thick. In various embodiments, the base may be thicker, thinner, or the same thickness as the sidewall. Similarly, the wall of the lid of the chiller may be thicker, thinner, or the same thickness as the sidewall and/or base of the body. In various embodiments, the chamber inside the chiller can be sized to hold a single portion, or multiple portions of a beverage. For example, the chamber can be sized to hold about 0.5 to 96 fluid ounces, or more, such as 1, 2, 4, 8, 12, 16, 24, 48, 64, or more fluid ounces.

[0050] In various embodiments, the funnel of the device of the present invention, and the opening in the funnel, may be any shape or size, as would be understood by a person skilled in the art. In one embodiment, the funnel may be sized to be capable of holding the entire portion of a beverage, such as about 0.5 to 24 ounces, or more. Exemplary sizes may include 0.5, 1, 1.5, 2, 3, 4, 8, 12, 16, 24, or more fluid ounces. In one embodiment, the opening of the funnel is sized accordingly to permit a flow rate of about 0.1 to 5 fluid ounces per second through the opening into the chamber inside the chiller, or into another vessel. However, the device of the present invention, or any component of the device, is not limited to any specific size or dimension described herein.

[0051] The disclosures of each and every patent, patent application, and publication cited herein are hereby incorporated herein by reference in their entirety.

[0052] While this invention has been disclosed with reference to specific embodiments, it is apparent that other embodiments and variations of this invention may be devised by others skilled in the art without departing from the true spirit and scope of the invention. The appended claims are intended to be construed to include all such embodiments and equivalent variations.

1. A device for cooling or mixing beverages, comprising: a body comprising a base and a sidewall, wherein said body is configured to receive a lid, and wherein said base and said sidewall form a chamber suitable for holding a liquid; a lid having a first opening, wherein said lid can be removably connected to said body; a funnel connected to said lid, said funnel having a second opening; and a splash disk connected to said lid or said body, wherein when said lid is connected to said body, said splash disk is positioned directly beneath said funnel in said chamber; and wherein said first opening communicates with said second opening and said chamber when said lid is connected to said body, such that when a liquid enters said first opening, the liquid is directed through said funnel, through said second opening, and onto said splash disk.

2. The device of claim 1, wherein the liquid is further directed by said splash disk onto the interior surface of said
body, thereby cooling the liquid when said body is at a lower temperature than the temperature of the liquid entering said device.

3. The device of claim 1, further comprising a vent or vent tube for allowing the pressure within said device to remain approximately equal to the pressure outside said device.

4. The device of claim 1, wherein said body comprises aluminum.

5. The device of claim 1, wherein said lid comprises an aeration screen in communication with said first opening.

6. The device of claim 1, wherein said base comprises one or more apertures for allowing a beverage to flow out of said device.

7. The device of claim 1, further comprising an o-ring to form a seal between said lid and said base.

8. The device of claim 1, further comprising a hand grip connected to the outside surface of said device.

9. The device of claim 1, wherein at least a portion of the interior surface of said body comprises ridges or grooves.

10. A device for cooling or mixing beverages, comprising:

    a body comprising a base and a sidewall, wherein said body is configured to receive a lid, and wherein said base and said sidewall form a chamber suitable for holding a liquid;

    a lid having a first opening, wherein said lid can be removably connected to said body;

    a funnel connected to said lid, said funnel having a second opening; and

    a column extending from an interior surface of said base, wherein said lid is connected to said body, said column is positioned directly beneath said funnel in said chamber; and

wherein said first opening communicates with said second opening and said chamber when said lid is connected to said body, such that when a liquid enters said first opening, the liquid is directed through said funnel, through said second opening, and onto said column.

11. The device of claim 10, wherein the liquid is further directed by said column onto the interior surface of said body, thereby cooling the liquid when said body is at a lower temperature than the temperature of the liquid entering said device.

12. The device of claim 10, further comprising a vent or vent tube for allowing the pressure within said device to remain approximately equal to the pressure outside said device.

13. The device of claim 10, wherein said lid comprises an aeration screen in communication with said first opening.

14. The device of claim 10, wherein said base comprises one or more apertures for allowing a beverage to flow out of said device.

15. The device of claim 10, further comprising an o-ring to form a seal between said lid and said base.

16. The device of claim 10, further comprising a hand grip connected to the outside surface of said device.

17. The device of claim 10, wherein at least a portion of the interior surface of said body comprises ridges or grooves.

18. A lid for a beverage container, comprising:

    a body, said body having a first opening, a funnel connected to said body, said funnel having a second opening;

    a splash disk connected to said body, wherein said splash disk is positioned directly beneath said funnel;

wherein said first opening communicates with said second opening and said chamber, such that when a liquid enters said first opening, the liquid is directed through said funnel, through said second opening, and onto said splash disk; and

    a means for connecting said body to a beverage container, wherein a liquid-tight seal is formed between said body and said beverage container when said body is connected to said container.

19. The lid of claim 18, further comprising a vent tube.

20. The lid of claim 18, further comprising an aeration screen in communication with said first opening.

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