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59%

Document A – Client drawings (unannotated)

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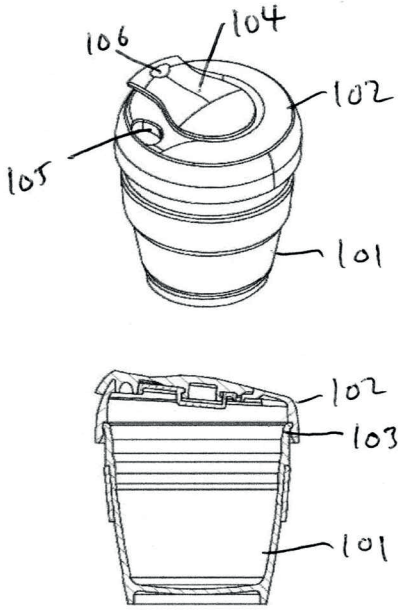

Figure 1 (prior art)

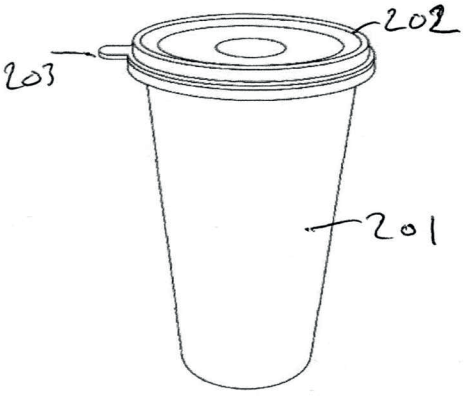

Figure 2 (prior art)

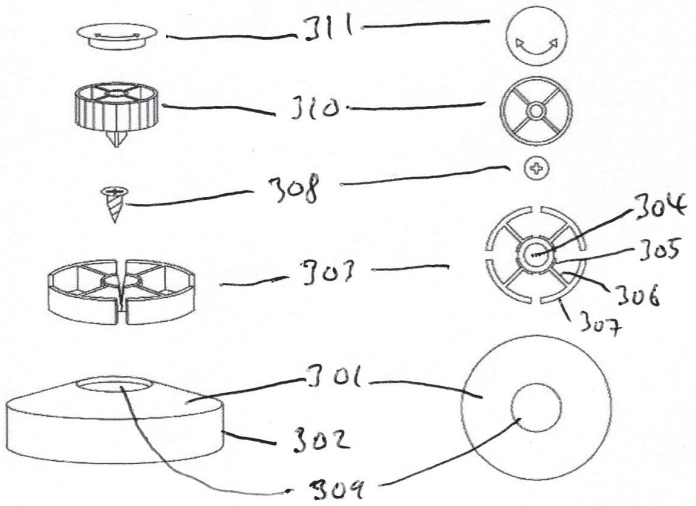

Figure 3

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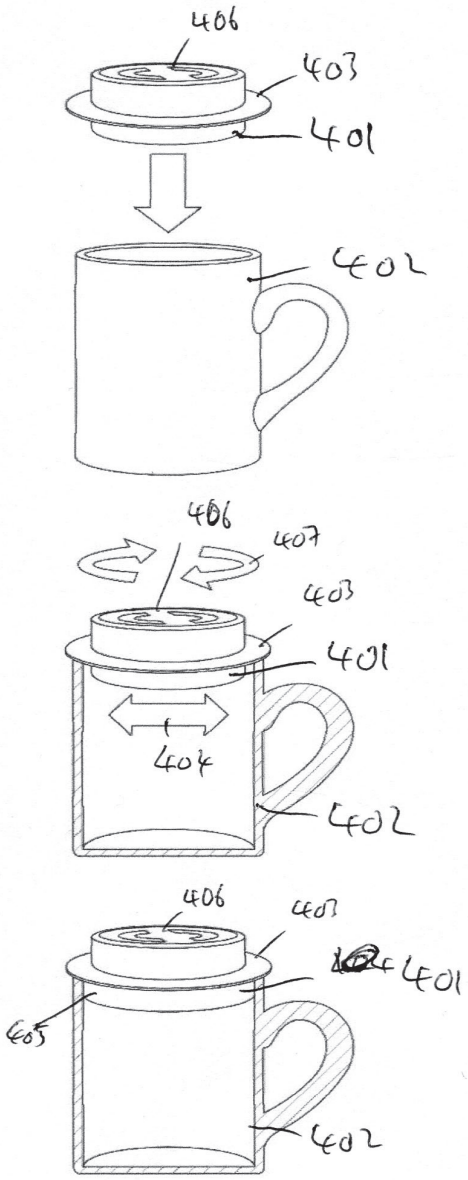

Figure 4

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Claims:

1. An adjustable lid for a receptacle, comprising: 2

   a flexible portion, comprising a circumference which is configured to engage with the wall of a receptacle, such that the lid seals said receptacle; and 3

   a means for mechanically expanding and contracting the circumference, such that the size of the lid can be altered to fit a variety of sizes of receptacle. 3 1 9

2. The lid of claim 1, wherein the circumference comprises a peripheral wall which can be placed internally to the opening of the receptacle, such that expanding the circumference causes the peripheral wall to bear against the internal wall of the receptacle. 2

3. The lid of claim 2, further comprising a radially extending skirt above the peripheral wall, said skirt being able to rest on the top edge of the receptacle. 1

4. The lid of claim 1, wherein the circumference comprises a peripheral wall which can be placed externally to the opening of the receptacle, such that contracting the circumference causes the peripheral wall to bear against the external wall of the receptacle. 1

5. The lid of claims 1-4, wherein the means for mechanically expanding and contracting the circumference comprises an expandable balloon and valves allowing air to be added or removed from the balloon. 1½

6. The lid of claim 5, comprising a pump for pumping air into the balloon. ½

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7. The lid of claims 1-4, wherein the means for mechanically expanding and contracting the circumference comprises:
    a. an expander comprising a threaded bore; and
    b. a tapered screw;

    wherein insertion of the screw into the bore causes the expander to expand the circumference. — 2

8. The lid of claim 7, wherein the expander comprises legs which engage with the circumference. — ½
9. The lid of claim 8, wherein the expander comprises two or more inner walls surrounding the bore, each inner wall being connected via a radial strut to an outer wall. — 2
10. The lid of claim 9, comprising four inner walls. — –
11. The lid of claim 9 or 10, wherein each inner wall is connected to the adjacent inner wall. — 1
12. The lid of claims 7-11, further comprising an integral screwdriver configured to engage with and drive the tapered screw. — 2
13. The lid of claim 12, comprising an end cap which covers the screwdriver. — –
14. The lid of claims 1-13, comprising a nozzle. — –
15. The lid of claims 12-13, wherein the lid comprises a nozzle which is integrated with the means for mechanically expanding and contracting the circumference. — 1
16. The lid of claim 15, wherein the nozzle can be flipped up to allow drinking and folded down such that the lid is sealed. — ½ –
17. The lid of claims 1-16, wherein the flexible portion is made of silicone.

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18. The lid of claims 1-13 or 17, comprising a drinking hole. –

19. The lid of claim 18, further comprising a tongue which is moveable to cover the drinking hole and to expose the drinking hole. –

20. The lid of claims 19, wherein the tongue comprises an indentation which fits into the drinking hole, and the lid comprises a further indentation into which the indentation of the tongue can be inserted when the drinking hole is exposed. –

21. A receptacle comprising the lid of claims 1-20. 2

22. The lid of claims 1-20 or receptable of claim 21, wherein the receptable is a coffee mug or cup. –

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Adjustable lid for a receptacle

1

The invention relates to an adjustable lid for a receptacle, in particular a mug or cup, wherein the size of the lid can be adjusted to fit receptacles of different sizes.

1

It is known to provide lids for receptacles, such as mugs or cups, to ensure that the contents of the receptacle do not spill out when the receptacle is disturbed. An example of a known cup 101 with a lid 102 is shown in Figure 1. The bottom half of Figure 1 shows that the cup 101 comprises a lip 103, and that the lid 102 fits over the lip. The lid is made of silicone, and when not on the cup, is slightly smaller in diameter than the mouth of the cup. The silicone allows the lid to flex, so it can be forced over the lip, and will then pop back to its original shape to grip the lid. Prior art receptacles by Tupperware® are also known, an example of which is shown in Figure 2. Figure 2 shows a container 201 with a flexible lid 202, which lid is made of silicone. The lid comprises a tab 203, which can be pulled to stretch the lid. The opposite side of the lid to the tab is placed onto the container, and the tab is pulled to stretch the lid, allowing it to be placed over the container. The tab is then released, which causes the lid to snap back to its resting shape, thus gripping and sealing the container. The tab can similarly be pulled to remove the lid. A disadvantage of these known lids is that their size is essentially fixed, so they can only fit one size of receptacle. The present invention aims to overcome this issue by providing a lid of adjustable size, so that it can fit many different sizes of receptacles.

3

In one aspect, provided is [claim 1]. The use of a means for mechanically expanding or contracting the circumference allows the user to vary the

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circumference of the lid, so it can be adjusted to fit receptacles of varying sizes. In contrast to the prior art, where the lid can only be temporarily expanded by the user forcibly deforming the material, the use of a mechanism which is integral to the lid allows the user to provide a more permanent size adjustment. The size adjustment is however reversible. This means that the lid can be used with one receptacle, and its size can then be adjusted so it can be used with further receptacles.

In an embodiment, provided is [claim 2]. Expansion of the circumference of the lid causes the peripheral wall to engage with the internal wall of the receptacle, which fills the circumference and provides a tight seal. This embodiment is preferred for receptacles such as cups with small diameters. Embodiments such as that of [claim 4] can be difficult to shrink to fit smaller diameter mugs while keeping a sufficiently strong, leak proof seal, so having the seal internal to the cup is helpful for smaller receptacles.

Preferably, provided is [claim 3]. The radially extending skirt is wider than the circumference of the flexible portion of the lid which sits inside the cup, so it rests of the rim of the cup so the lid cannot drop into the cup.

In an alternative embodiment, provided is [claim 4]. In this embodiment, the circumference is expanded so the lid fits over the opening of the receptacle, and the peripheral wall will be external to the receptacle. The circumference can then be contracted against the receptacle to seal it. This means that the bias exerted against the receptacle is also controllable, in contrast to the prior art, so the strength of the seal can be adjusted. This also allows material which is less flexible than the silicone of the prior art to be used if desirable, as the mechanism

reduces the amount of effort needed to fit the lid over the mug. It will be understood that the material still must have a degree of flexibility to allow the expansion and contraction to take place.

In an embodiment, provided is [claim 5]. An expandable balloon provides a convenient means of expanding the circumference via allowing air into the balloon via a valve. The user can then conveniently contract the circumference by releasing another valve to allow air out. ✓

Preferably, provided is [claim 6]. While the balloon could be inflated using a separate pump, it is convenient to provide a pump as part of the lid to provide air to the balloon. It can be a hand operated pump or a mechanical pump. ✓

In another embodiment, provided is [claim 7]. Insertion of a tapered screw into a threaded bore leads to expansion of the bore, in the manner of Rawlplugs®, which expansion will then in turn engage with the flexible portion of the lid. This provides a convenient means of altering the circumference, as the user can easily insert and tighten the screw to expand it, and remove the screw to contract it. The screw must be accessible to the user, so a hole can be provided in the lid to allow this. ✓

In an embodiment, provided is [claim 8]. The legs will extend from the expander and engage with the circumference, meaning that when the screw is inserted the legs push outwards to expand the circumference.

In an embodiment, provides is [claim 9]. The legs are formed of inner walls which provide strength to the inner part of the structure, radial struts, and outer walls. ✓

The outer walls increase the surface in contact with the circumference to aid expansion.

In an embodiment, provided is [claim 10]. The use of four walls provides optimum expansion as the walls provide equal force around each part of the ✓ circumference.

In an embodiment, provided is [claim 11]. Connecting the inner walls together provides increased strength and stability to the system. ✓

In an embodiment, provided is [claim 12]. While an external screwdriver could be used, including an integral screwdriver to drive the screw is more convenient for the user, as the user may not often carry a screwdriver. ✓

In an embodiment, provided is [claim 13]. An end cap covering the screwdriver provides a surface for printing material such as instructions or advertising.

In an embodiment, provided is [claim 14]. The inclusion of a nozzle allows the user to drink from the cup without having to remove the lid. ✓

In an embodiment, provided is [claim 15]. In this embodiment, the user can use the nozzle as a handle to operate the actuator mechanism, as well as drinking from it. ✓

In an embodiment, provided is [claim 16]. The use of a nozzle which can be flipped means that the cup can still be completely sealed when the user is not drinking from it.

In an embodiment, provided is [claim 17]. Silicone is a preferred material which provides sufficient flexibility for expanding the lid, plus sufficient resilience to ✓

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return to its original shape thus allowing contraction in response to the mechanical means being contracted.

In an embodiment, provided is [claim 18]. A drinking hole is useful to allow drinking without removing the lid.

In an embodiment, provided is [claim 19]. The use of a tongue to cover the drinking hole provides a seal when the drinking hole is not being used.

In an embodiment, provided is [claim 20]. This allows the tongue to securely cover the drinking hole when not in use, and to be stowed out of the way during drinking.

Also provided is [claim 21]. Preferably, the receptacle is a mug or cup such as a coffee cup [claim 22]. 14

The invention will now be described, by way of example only, with reference to the figures, in which:

Figure 1 shows a perspective view (top) and side view (bottom) of a prior art travel mug.

Figure 2 shows a perspective view of a prior art container.

Figure 3 shows exploded views of an embodiment of the lid of the invention, in perspective view (left) and plan view (right).

Figure 4 shows perspective views of another embodiment of the lid of the invention. 4

Prior art figures 1 and 2 have been described in the introductory portion. Additionally, the lid 102 in Figure 1 comprises a drinking hole 105 and a tongue

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106. The tongue 104 comprises an indentation 106, which is moveable between the drinking hole 105 and another indentation on the lid at 106. This allows the drinking hole to be covered and uncovered to both allow drinking and seal the lid. Such a system is useful in embodiments of the present invention. ✓

The lid in Figure 3 shows a flexible portion 301 comprising a circumference which is a peripheral wall 302. An expander 303 is position internally under the cover. The expander comprises a threaded bore 304 surrounded by, in this embodiment, four inner walls 305 which are linked to corresponding outer walls 307 via radially extending struts 307. A screw 308 is provided and can be screwed into the threaded bore 304. A hole 309 is provided in the cover to allow access to the bore. When a screw is wound downwards into the bore, it pushes the inner walls 305 apart which in turn leads to the outer walls 307 expanding outwards. The outer walls 307 engage with the peripheral wall 302 and also push it outwards, thus expanding the circumference of the flexible portion 301. The lid may also include an intrinsic screwdriver 310 which drives the screw 308, and a cover 311 for the screwdriver. The user can then turn the cover 311 to turn the screwdriver 310 and hence turn the screw 308. ✓

To use the lid, the user turns the screwdriver 310 clockwise to insert the screw 308 and expand the circumference of the lid until the peripheral wall 302 fits over the mouth of the receptacle on which the lid is to be placed. The user then turns the screwdriver 310 anticlockwise, which results in the expander 303 contracting and the circumference decreasing due to the resilience of the material forming the flexible portion 301. The peripheral wall 302 bears against the outer wall of the mug, providing a seal, the strength of which can be adjusted.

✓

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It will be understood that the flexible portion 301 must have sufficient flexibility to deform allow the expansion to take place when a force is applied. It should also have sufficient resilience such that when the expander is contracted (thus removing the force), the material will not remain in its expanded shape and will contract along with the expander. A suitable material is silicone. However, the mechanical mechanism means that a stronger, less flexible material can be used as the bias exerted against the receptacle is mechanically adjustable. ✓

The expansion means itself must also have sufficient strength relative to the resilience of the material forming the flexible portion, such that the flexible portion will substantially retain its current shape once the user ceases operation of the expansion means. This allows the size of the lid to be temporarily fixed to allow it to fit on and seal a receptacle of a particular size. ✓ 3

Figure 4 shows another embodiment of a lid for use particularly with ✓ smaller mugs. The embodiment includes a flexible portion 401. In use, the flexible portion is placed into a receptacle such as a mug 402, as shown in the top part of the figure. The lid includes a skirt 403 ✓ which extends radially above the flexible portion and rests on the rim to prevent the lid falling into the mug (as shown in the middle and bottom parts of the figure). The flexible portion 401 is now expanded as shown by arrow 404 in the middle figure, such that it expands to fill the mug 402 and bear against the outer walls at 405, thus sealing the mug. In this embodiment, an actuator 406 is used as the means for expanding the flexible portion 401, via twisting as shown by arrow 407 in the middle figure. The actuator may be formed by an expander as shown in Figure 3. 3

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Abstract:

Adjustable lid for a receptacle ½

Provided is an adjustable lid for a receptacle, particularly a mug or cup, wherein the size of the lid can be adjusted to fit different size cups. The lid comprises a flexible portion 301 with a circumference 302 which can engage with the wall of a receptacle, and a means of mechanically expanding the circumference 303 such that the size of the lid can be altered to fit a variety of sizes of receptacle. 3

[Figure 3] ½

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