TITLE: ONE-PIECE DRINK-THROUGH CUP LID WITH A STRAW SECTION

BACKGROUND OF THE INVENTION

1. Field of the Invention:

The present invention relates to a drink-through cup lid, particularly to one that is formed in one-piece structure with a conic straw section.

2. Description of the Related Art:

When drinking beverages and drinks like coffee, juices, tea and milk, single-use long straws are commonly used. Referring to FIG. 1, a long straw **61** is poked through a crossed opening **621** on a cup lid **62** to consume the contents inside a beverage cup **50**. However, such long straws are single-use and made of unrecyclable and indecomposable plastics, causing serious outcomes to the environment. On the other hand, the crossed opening **621** on the cup lid **62** is not sealed; therefore there is also the problem of leakage.

In recent years, government agencies in many countries have discussed and proposed many projects for plastic products reduction. In Taiwan, the single-use plastic straw ban is scheduled to be in force in 2019 in fast food restaurants and department stores as the first stage. It is estimated that by 2030, plastic bags, disposable tableware, single-use plastic straws and single-use beverage cups for take out will be fully banned from use. Nonetheless, the conveniences and irreplaceability of straws still exist.

Hence, substitutes that are recyclable and eco-friendly such as paper straws and straws made of other materials are developed constantly. Still, there is the

problem of weak structure with such straws. On the other hand, the straws have to be separately carried from the beverage cups and therefore it is common for the straws to be inadvertently fallen, forgotten or ignored.

In Taiwanese patents no, M359986, M560449 AND M481666 there are structures designed to combine the straws with beverage cups to overcome the problems stated above, but such designs have complex structure with high manufacturing costs. Therefore the designs are not suitable for single-use beverage cups and it is apparent that such designs still need to be improved for better applicability.

SUMMARY OF THE INVENTION

A primary objective of the present invention is to provide a one-piece drink-through cup lid with a straw section that ingeniously integrates a single-use cup lid with a conic straw section to ensure easy carrying of beverages and avoid inadvertently missing of conventional long straws.

Another objective of the present invention is to provide a one-piece drink-through cup lid with a straw section that can reduce consumption of conventional long straws with an eco-friendly structure.

Another objective of the present invention is to provide a one-piece drink-through cup lid with a straw section that is fully sealed and closed before used to prevent from leakage.

To achieve the objectives mentioned above, the drink-through cup lid designed for covering on beverage cups comprises a cup lid and a detachable tube section according to the annexed claims.

Whereby the tube section and the conic section of the drink-through cup lid are formed in one-piece to form a closed and sealed structure and when the tube section is torn along the tear line and detached from the tube section, a second through hole is formed at the top of the tube section; the second through hole is connecting through the first through hole to form a conic straw section on the cup lid for drinking through.

Preferably, the tear line is a broken line; or a V-shape structure is also applicable for easy removing.

Furthermore, the conic section is shaped in a curve gradually extending wider from the rim to the peripheral surface of the cup lid.

The diameter of the bottom periphery of the conic section can be 25-50mm; the diameter of the rim can be 15-25mm; and the height from the bottom periphery to the rim can be 25-40mm. And the diameter of the tube section can be 8-16mm; the height from the rim to the closed surface of the tube section can be 10-20mm.

With structures disclosed above, the present invention has a conic straw structure formed on the drink-through cup lid to ingeniously integrate a single-use drink-through cup lid with a conic straw section for the purpose of easy carrying of the beverage cup it is placed on without leaking or spilling and preventing inadvertently missing of conventional long straws. Besides, the conic straw structure can also reduce consumption of conventional long straws and achieve an eco-friendly feature.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram of a conventional cup lid;

FIG. 2 is a perspective view of the present invention in a preferred embodiment;

FIG. 3 is a side elevation view of the present invention in a preferred embodiment;

FIG. 4 is a sectional view of the present invention in a preferred embodiment;

FIG. 5 is a partially enlarged view of FIG. 4;

FIG. 6A is a partially sectional view of the present invention in a preferred embodiment;

FIG. 6B is a schematic view illustrating the present invention being stackable;

FIG. 7 is a practical application view showing the present invention covering a beverage cup;

FIG. 8 is a practical application view showing the present invention covering a beverage cup with a tube section being removed; and

FIG. 9 is a practical application view showing the present invention covering a beverage cup with a conic straw section.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

To further illustrate the features and structures of the drink-through cup lid, please referring to an embodiment in the following with reference to FIGS. 2-6B. A one-piece drink-through cup lid with a straw section **40** is designed for

covering on a beverage cup **50**. In the preferred embodiment, the one-piece drink-through cup lid with a straw section **40** mainly includes a cup lid **10**, a conic section **20** and a detachable tube section **30** arranged on the conic section.

The cup lid **10** has a peripheral surface **11**, a peripheral edge **12** extending from an outer edge of the peripheral surface **11**, a circular depression **13** and a wavelike surface **14**. Such structure can be commonly seen in conventional cup lids; however, the features of the present invention is that the conic section **20** is formed and protruding axially at a center of the peripheral surface **11** and has a bottom periphery **21** connecting to the peripheral surface **11** so as to form a first through hole **22** inside the conic section **20**, and that a rim **23** is formed by having the conic section **20** extending outwardly from the bottom periphery **21**. In this embodiment, the axial direction is shown in X-X line in the drawings.

The tube section **30** is extending axially from an inner periphery of the rim **23** and has a closed surface **31** at a top of the tube section **30** and a tear line **32** surrounding a bottom edge of the tube section **30** for detachment. In this embodiment, the tear line **32** is a broken line; but a V-shaped structure is also applicable as long as the tube section **30** can be easily torn and removed.

Thereby the tube section **30** and the conic section **20** are formed in one-piece to form a closed structure of the drink-through cup lid **40** and when the tube section **30** is torn along the tear line **32** and detached from the tube section **30**, a second through hole **24** is formed at the top of the tube section **30**; the second through hole **24** is further connecting through the first through hole **22** to form a conic straw section on the cup lid **10** for drinking through.

Further referring to FIGS. 3-5, the conic section **30** is shaped in a curve **C** gradually extending wider from the rim **23** to the peripheral surface **11** of the

cup lid **10** to ensure better endurance of the drink-through cup lid **40**, but the present invention is not limited to such application. In this embodiment, a diameter **D** of the cup lid **10** is 100mm; if the diameter **D** of the cup lid **10** is 100mm, a diameter **D1** of the bottom periphery **21** of the conic section **20** is preferred to be 25-50mm and a diameter **D2** of the rim **23** is 15-25mm. And a height **H1** from the bottom periphery **21** to the rim **23** can be arranged at 25-40mm.

In addition, a diameter **D3** of the tube section **30** is 8-16mm and a height **H2** from the rim **23** to the closed surface **31** of the tube section **30** is preferred to be 10-20mm, but the present invention is not limited to such application.

Therefore, we can learn that the diameter **D1** of bottom periphery **D** of the conic section **20** is 25-50% long of the diameter **D** of the cup lid **10**; the diameter **D2** of the rim **23** of the conic section **20** is 15-25% long of the diameter **D** of the cup lid **D**; the height **H1** from the bottom periphery **21** to the rim **23** is 25-40% long of the diameter **D** of the cup lid **10**; the diameter **D3** of the tube section **30** is 8-16% long of the diameter **D** of the cup lid **10**; and the height **H2** from the rim **23** to the closed surface **31** of the tube section **30** is 10-20% long of the diameter **D** of the cup lid **10**. With such arrangement, the proportion of the sizes between the conic section **20** and the tube section **30** makes the present invention an endurable and convenient drink-through cup lid **40** for the consumers.

As shown in FIG. 4, the tube section **30** is arranged in a conic shape with an angle ***α***; together with the curve shape **C** of conic section **20** gradually extending wider from the rim **23** to the peripheral surface **11** of the cup lid **10**, the present invention therefore is stackable and requires less space for stocking

as shown in FIG. 6.

In this embodiment, the conic section **20** and the detachable tube section **30** can be made in one-piece by automatic machines, but the automatic machines are not part of this present invention.

FIG. 7 is a practical application view of the present invention showing the drink-through cup lid **40** covering on the beverage cup **50**. The drink-through cup lid **40** is in a fully closed status so the beverage or whatever inside the beverage cup **50** would not leak at all. Therefore the present invention is able to improve the leakage problem due to a crossed opening **621** on a conventional cup lid **62**.

FIG. 8 is another practical application view of the present invention showing the tube section **30** being removed. With the tear line **32** arranged along the bottom edge of the tube section **30**, the consumers can simply push a side of the tube section **30** and the tube section **30** would be detached along the tear line **32** and then removed completely, exposing the second through hole **24** that connects to the first through hole **22** and ready for drinking.

FIG. 9 is another practical application view of the present invention showing the conic straw section formed on the top of the drink-through cup lid **40** after the tube section **30** is detached and removed. With the conic straw section, a consumer is able to drink or suck in the coffee, beverage, bubble tea or fruit pieces inside the beverage cup **50** by the second through hole **24**.

In conclusion, the present invention has features described as following.

1. The drink-through cup lid **40** is formed in one-piece to ingeniously integrate a single-use cup lid **10** with the conic straw structure, so as to

overcome the inconveniences of carrying long straws and the recycling procedure.

2. The conic straw structure has stronger structure than conventional cup lids and is stackable for saving space for stocking.

3. The structure of the drink-through cup lid **40** is fully sealed and closed before drinking, preventing from leakage of the contents inside the beverage cup it is placed on.

4. The size arrangement of the drink-through cup lid **40**, the conic section **20** and the tube section **30** are designed to achieve a better proportion for a stronger structure and convenient use for the consumers.

Although particular embodiments of the invention have been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.

What Is Claimed Is:

1. A one-piece drink-through cup lid with a straw section used for covering on beverage cups, said drink-through cup lid (40) comprising:

a cup lid (10) having a peripheral surface (11) and a peripheral edge (12) extending from an outer edge of said peripheral surface (11);

characterized in that a conic section (20) is formed and protruding axially at a center of the peripheral surface (11) and has a bottom periphery (21) connecting to the peripheral surface (11) so as to form a first through hole (22) inside the conic section (20), and a rim is formed by the conic section (20) extending outwardly from the bottom periphery (21);

a detachable tube section (30) extending axially from an inner periphery of said rim and having a closed surface (31) at a top of said tube section (30) and a tear line (32) surrounding a bottom edge of said tube section (30) for detachment;

whereby the tube section (30) and the conic section (20) are formed in one-piece to form a closed structure of the drink-through cup lid (40) and when the tube section (30) is torn along the tear line (32) and detached from the tube section (30), a second through hole (24) is formed at the top of the tube section (30), said second through hole (24) connecting through the first through hole (22) to form a conic straw section on the cup lid (10) for drinking through.

2. The one-piece drink-through cup lid with a straw section as claimed in claim 1, wherein the tear line (32) is a broken line.

3. The one-piece drink-through cup lid with a straw section as claimed in claim 1, wherein the conic section (20) is shaped in a curve gradually extending

wider from the rim to the peripheral surface (11) of the cup lid (10).

4. The one-piece drink-through cup lid with a straw section as claimed in claim 1, wherein a diameter of bottom periphery (21) of the conic section (20) is 25-50% long of a diameter of the cup lid (10); a diameter of the rim of the conic section (20) is 15-25% long of the diameter of the cup lid (10); a height from the bottom periphery (21) to the rim is 25-40% long of the diameter of the cup lid (10); a diameter of the tube section (30) is 8-16% long of the diameter of the cup lid (10); and a height from the rim to the closed surface (31) of the tube section (30) is 10-20% long of the diameter of the cup lid (10).

5. The one-piece drink-through cup lid with a straw section as claimed in claim 4, wherein the a diameter of the cup lid (10) is 100mm; the diameter of the bottom periphery (21) of the conic section (20) is 25-50mm; the diameter of the rim is 15-25mm; the height from the bottom periphery (21) to the rim is 25-40mm; the diameter of the tube section (30) is 8-16mm; and the height from the rim to the closed surface (31) of the tube section (30) is 10-20mm.

6. The one-piece drink-through cup lid with a straw section as claimed in claim 5, wherein the tube section (30) is in a conic shape.