

FILTERED DRINKING STRAW

Description

TECHNICAL FIELD

[0001] The present invention relates to a drinking straw with filtering mechanism to prevent ingestion of solid particles within a drink.

BACKGROUND ART

[0002] Today's drinking straws are mostly designed to improve packaging efficiency and ease of consumption. Telescopic straws, for example, were primarily designed to overcome the limited packaging space that small drink packages allow for. Straws with large diameter and those with spoon-like end were developed to make it easier to consume drinks containing desirable solid particles, such as bubble tea with tapioca pearl condiments, and smoothie with cookie crumbs.

[0003] The usefulness in having a cost effective solution for a drinking straw that can filter out and prevent ingestion of solid particles within a drink is evident. Such usefulness is amplified if the solid particles are intentionally present primarily for aesthetic enhancement, as this scenario disallows the exclusion of the particles through pre-filtration of the beverage. A good industrial application for such a drinking straw with filter will be for herbal infusion contained within takeaway clear plastic cups; while the brewed herbs such as flowers, leaves, or seeds can be present in the drink for aesthetic enhancement, they will be filtered out by such drinking straw and will not reach a person's mouth and negatively impact the drinking experience.

[0004] Previous works on filtering systems within drinking straws, such as the one described in WO 91/03427, mostly include elaborated designs with filtering medium such as zinc and copper, with the intention to reduce impurities and bacteria within a drink. Such drinking straws while useful, are not suitable and cost-effective for mass production to accompany disposable drink packages.

[0005] In a relevant work US 2010/0258498 A1, two main types of embodiments of drinking straw with filtering mechanism were described. First

type of embodiment comprises a drinking straw with a sealed end and a plurality of openings along the straw. Such a design changes the shape of the straw at the sealed end, likely rendering it too sharp and dangerous, or no longer suitable to be pierced through seals on package tops. The other main type of embodiment described comprises two open ends, wherein one of said ends is covered by a filter element. The usability and reliability of such a design is unclear since the act of piercing the straw through package seals with the filter end is likely to cause damage to the filter.

OBJECTS OF THE PRESENT INVENTION

[0006] One object of the present invention is to realize a drinking straw that can filter out and prevent solid particles from reaching a person's mouth, at the same time allowing normal utilization for imbibing a drink.

[0007] Another object of the present invention is that the solution must be cost effective for mass production so that the drinking straw can be used as disposables, such as in the industrial application example described in paragraph [0003].

[0008] A further object of the present invention is that the solution works regardless of whether a pointed end is required for insertion of straw into the seal on top of drink packages. In the case of a drinking straw with a pointed end, the piercing action through the seal on package top should not compromise the usability and reliability of the solution.

SOLUTION

[0009] According to the present invention, the aforementioned objects are achieved by a drinking straw characterized by two or more coaxial tubular straws whose positions are longitudinally displaced, wherein one of the inner straws comprises an end with a porous filter attachment, said end is not the same as the drinking straw opening that is furthest away from the straw opening intended to be placed in the mouth of the person imbibing the drink.

BRIEF DESCRIPTION OF ACCOMPANYING DRAWINGS

[0010] One preferred embodiment of the present invention will be described in greater detail hereinbelow, with reference to the accompanying drawings. In the accompanying drawings:

Fig. 1 is a perspective view showing a preferred embodiment of the present invention;

Fig. 2 is a front view of the apparatus shown in Fig. 1; and

Fig. 3 is an enlarged cross-sectional view of the apparatus shown in Fig. 2, taken along lines 3--3.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0011] One preferred embodiment of the present invention comprises an outer straw 10, and an inner straw 11, wherein said inner straw 11 has a porous filter attachment 12 on the top end that is concealed within the outer straw 10. The positions of the straws may be fixed, or they can be telescopically slidable, the latter requiring just a simple additional step to the current production pipeline for telescopic drinking straws. The straw may also be bendable by means of a concertina-like hinge.

[0012] The porous filter 12 can be made of paper, plastic or any other material that is cost-effective and permits liquid to pass through while filtering out undesirable solid particles. Food safe adhesive should be used to secure said filter attachment 12, the latter may be in the form of a mesh or net whose holes can be customized to filter out different sized solid particles, or it may be a simple filter paper that is often used in tea bags. Trials have demonstrated great success in using said filter paper.

[0013] Although said preferred embodiment shows only two straws 10, 11, the solution according to the present invention works the same way for three or more straws, as long as the porous filter 12 is not attached to the bottommost straw opening 13 that is furthest away from the

topmost straw opening 14 intended to be placed in a person's mouth for imbibing the drink. This is to protect said filter 12 from damage when said bottommost straw opening 13 which is often pointed is pierced through the seal on top of drink packages.

[0014] For practicality, the filter element 12 is preferred to be attached to the top end of the bottommost straw 11 that is furthest away from the straw opening 14 intended to be placed in the mouth of the person imbibing the drink, and the said bottommost straw 11 is preferred to be short, so that any remaining liquid can flow down quickly to the drink when the person releases suction, especially in the case of using filter paper as opposed to using material with a higher porosity such as plastic mesh or net.

[0015] As will have been apparent from the above description, the present invention realizes a drinking straw that can filter out and prevent ingestion of solid particles within a drink, said drinking straw can be manufactured cost effectively with a simple additional step to the current production pipeline, and the solution works regardless of whether a pointed end is required for insertion of straw into the seal on top of drink packages.

Claims

1. A drinking straw characterized by two or more coaxial tubular straws (10, 11) whose positions are longitudinally displaced, wherein one of the inner straws (11) comprises an end with a porous filter attachment (12), said end is not the same as the drinking straw opening (13) that is furthest away from the straw opening (14) intended to be placed in the mouth of the person imbibing the drink.
2. The drinking straw according to claim 1, characterized in that said porous filter (12) is attached to the top end of the bottommost straw (11) that is furthest away from said straw opening (14) intended to be placed in the mouth of the person imbibing the drink.

3. The drinking straw according to claim 1 or 2, characterized in that the straw (11) with said porous filter attachment (12) is shorter than the other coaxially displaced straws (10).
4. The drinking straw according to any of the claims 1 – 3, characterized in that said porous filter attachment (12) comprises filter paper.
5. The drinking straw according to any of the claims 1 – 3, characterized in that said porous filter attachment (12) comprises plastic mesh.
6. The drinking straw according to any of the claims 1 – 5, characterized in that said drinking straw is telescopically slidable.
7. The drinking straw according to any of the claims 1 – 5, characterized in that said drinking straw is bendable by means of a concertina-like hinge.