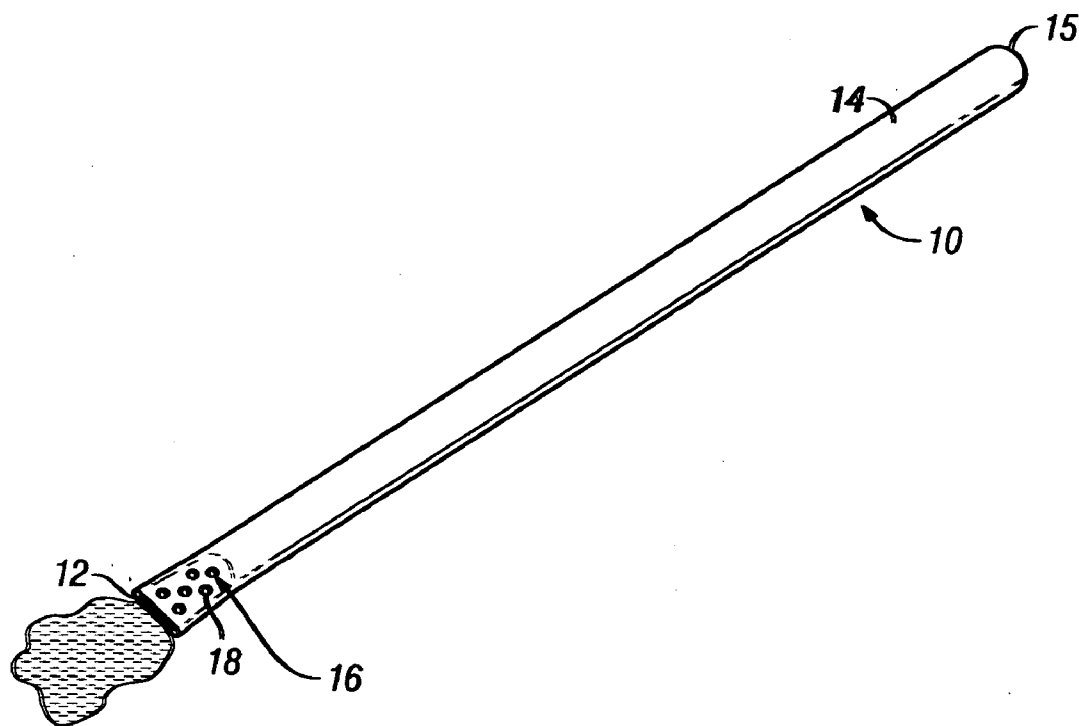


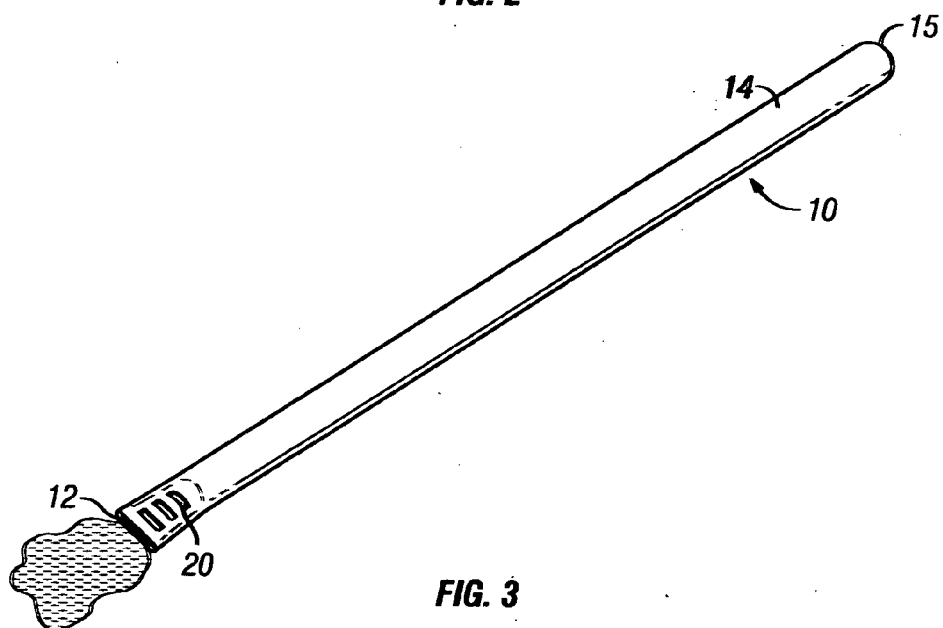
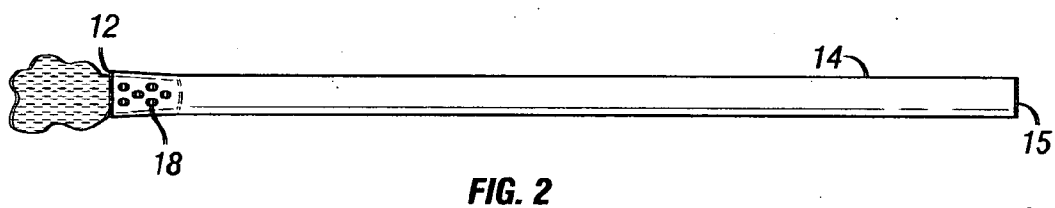
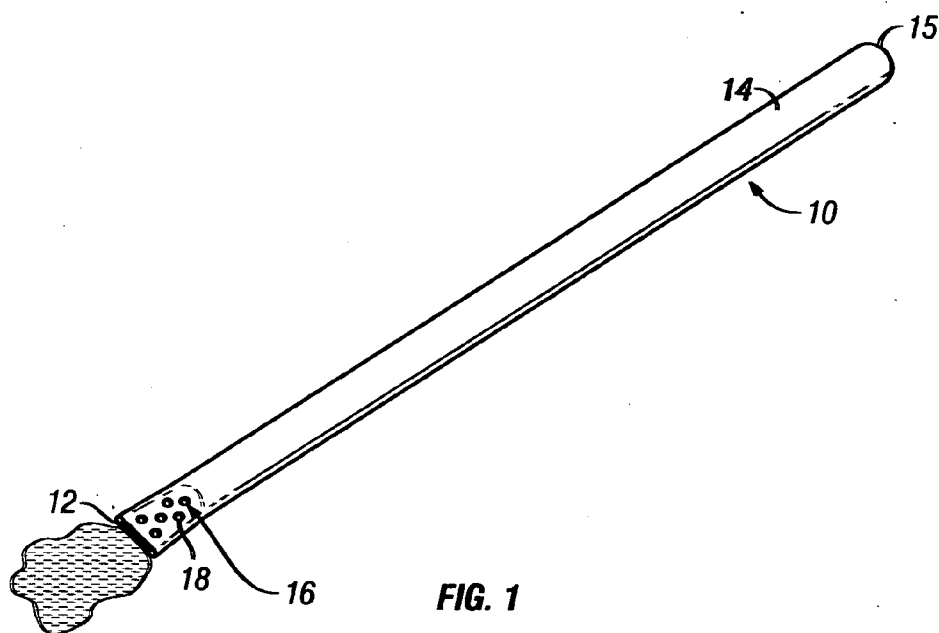


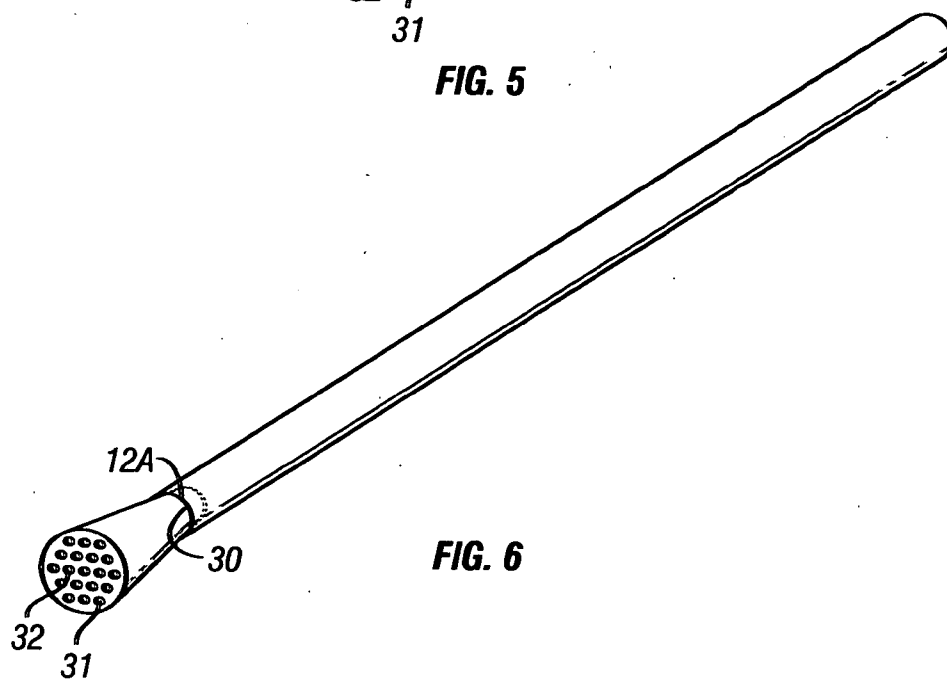
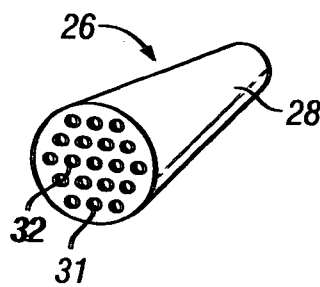
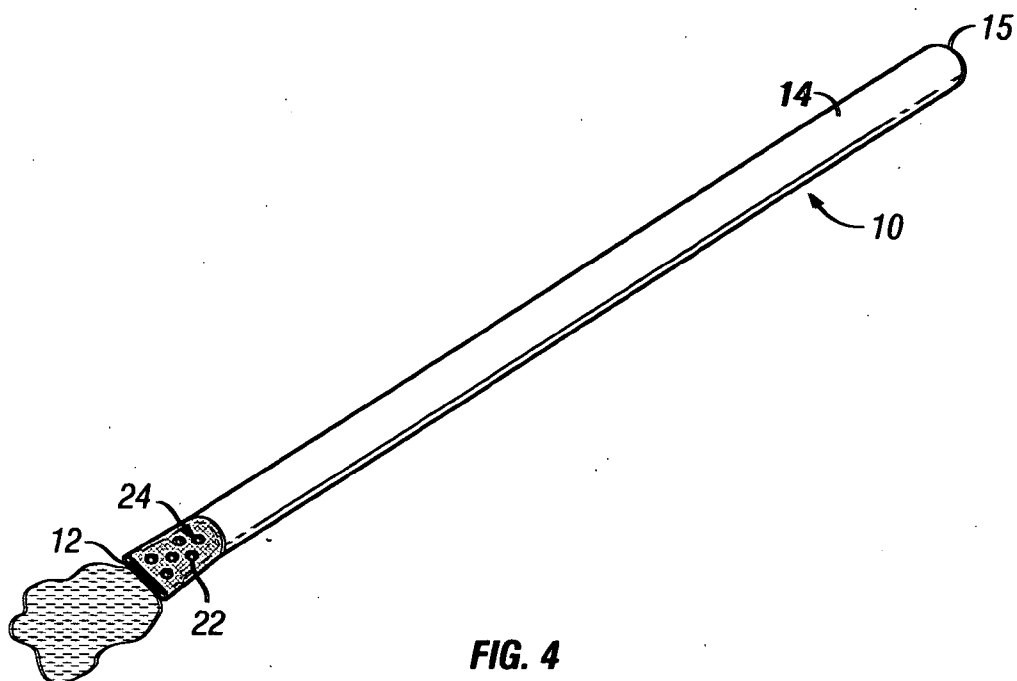
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Zaccheo(10) **Pub. No.: US 2010/0155500 A1**(43) **Pub. Date: Jun. 24, 2010**(54) **SAFETY DRINKING STRAW****Publication Classification**(76) Inventor: **Michael J. Zaccheo**, Bonita
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A47G 21/18 (2006.01)(52) **U.S. Cl.** **239/33; 220/705**(57) **ABSTRACT**Correspondence Address:
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A drinking straw is sealed at one end and a foraminous filter member is formed in the tubular body of the straw adjacent the sealed end. Upon immersion of the tube in a liquid and suction applied to the opposite end of the tube, liquid is drawn into the tube through the foraminous member, but solid material such as pits or other debris in the liquid are not, being blocked from ingestion by the otherwise sealed second end of the tube.

(21) Appl. No.: **12/317,179**(22) Filed: **Dec. 19, 2008**





SAFETY DRINKING STRAW

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to a drinking straw, and more particularly, a drinking straw designed to preclude the entry of solid material, such as citrus pits, pulp and the like, into the straw and liquid ingested by the user.

[0003] 2. Description of the Prior Art

[0004] Plastic and paper straws having a tubular body open at opposite remote ends are in common use for ingesting a liquid. One open end of the straw is inserted in the liquid housed within a container or drinking glass and the other end is inserted in the mouth of the user. Suction is applied to the tube end in the user's mouth to draw the liquid in the container through the opposite end of the tubular body into the mouth.

[0005] However, in the case of certain liquids, such as iced tea, the use of condiments such as lemons and limes to flavor the liquid results in the deposit of pits or other solid material in the liquid, which may become entrained in the liquid suctioned through the tubular straw. The same may occur with pulp in orange juice or solid mint used to flavor the tea. These solids may cause children or any user for that matter to gag on the liquid as it is ingested or cause deterioration of the flavor provided by the condiment.

[0006] It is therefore desirable to provide a drinking straw in which some of the bulk components in the liquid to be ingested are filtered from the liquid before it enters the mouth of the user. One prior device to accomplish this purpose is shown in U.S. Pat. No. 5,156,335.

[0007] The straw disclosed in this patent comprises a tube having a passageway containing filtering medium and plugs positioned in the tube to keep the filter medium in the straw. The plugs permit the passage of an aqueous solution there-through but not the passage of the filter medium. The plugs are retained within the tube in a forced fit relation by being inserted when compressed and then released. This invention provides such a filter, but in lieu of the use of an expensive filtering medium and plug structure to capture the filter medium in the tube, the filter is provided externally of the tube and is simple to manufacture.

SUMMARY OF THE INVENTION

[0008] In accordance with the invention, the non-suction end of the drinking straw is sealed and a foraminous filter member is formed in the tubular body of the straw adjacent the sealed end. The foraminous member may take a variety of forms, such as series of small holes or bores of different or various shape depending on the particular use of the straw. The member may also be a screened mesh or a conical shaped screen inserted in the second, or non-suction open end of the tube. Upon suction being applied to the opposite end of the tube, liquid is drawn into the tube through the foraminous member, but solid material such as pits or other debris in the liquid are not, being blocked from ingestion by the otherwise sealed second end of the tube.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Further objects and advantages of the invention will become more apparent from the following description and claims, and from the accompanying drawings, wherein:

[0010] FIG. 1 is a perspective view of one embodiment of the drinking straw of the present invention;

[0011] FIG. 2 is a side view in elevation of the drinking straw of FIG. 1 illustrating its foraminous member at one end thereof;

[0012] FIG. 3 is a perspective view of another embodiment of the drinking straw of the present invention utilizing different shapes of holes as part of the foraminous member;

[0013] FIG. 4 is a perspective view of yet another embodiment of the drinking straw of the present invention provided with a screen mesh on the non-suction end;

[0014] FIG. 5 is a perspective view of a tapered foraminous member which is adapted to be inserted to seal the non-section end of the drinking straw; and

[0015] FIG. 6 is a composite perspective view of the foraminous member illustrated in FIG. 5 being inserted in the non-suction end of the drinking straw to form still another embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0016] Referring now to the drawings in detail, wherein like numerals indicate like elements throughout the several views, in accordance with the invention as shown in FIGS. 1 and 2, a drinking straw 10 is illustrated. Straw 10 may be formed from biodegradable plastic or paper. The non-suction end 12 of the tubular body 14 of the drinking straw 10 of the present invention is sealed by adhesive or in the case of a plastic straw, heat shrinking the plastic of tubular body 14 at end 12. Any comparable means can be used to effect the seal at end 12, such as sonic welding.

[0017] A foraminous member 16 is formed in the tubular body 14 of the straw 10 adjacent the sealed end 12. The foraminous member may take a variety of forms, such as series of small holes or bores 18 on the exterior of tubular body 14 having communication with the interior of the tubular body (as shown in FIGS. 1 and 2). The holes may be of different or various shapes depending on the particular use of the straw. For example, the holes or bores 18 may be circular or rectangular, as holes or bores 20 in FIG. 3, depending on the size of the debris or pits to be filtered, and may be punched or stamped in the tubular body 14, before rolled into a tube or after the tube is rolled. Further, relatively large-sized holes would also aid in the ingestion of semi-liquid, semi-solid drinks, such as those infused with chopped ice or ice granules, while still precluding debris from entering the interior of the tubular body of the straw.

[0018] The member may also be a screened mesh 22 adhered by a suitable adhesive or the like adjacent end 12 of the tubular body 14, with larger holes 24 punched or stamped in the body for increased draw of liquid through tubular open end 15, as shown in FIG. 4.

[0019] FIGS. 5 and 6 illustrate that a conical shaped screen element 26 may alternatively be inserted in the second, or non-suction open end 12 of the tube 14 to close the circular The conical surface 28 of element 26 is tapered to fit any diameter straw, making it universal in application and may be inserted and pushed into a circular opening 30 left in an open end 12A until the surface 28 binds by friction or is forced fitted with the interior of end 12A. The bottom of conical insert 26 includes a foraminous member or plate 32 having a series of bore or holes 31.

[0020] Upon suction being applied and induced in end 15 of the tube 14, liquid will be drawn into the tube through the foraminous elements 18, 20, 22, and 31 but solid material such as pits or other debris in the liquid are not, being blocked

from ingestion by the otherwise sealed second end **12**, **12A** of the tube **14** and the tubular material around the foraminous member.

What is claimed is:

1. A drinking straw immersible in a liquid comprising:
a tube having an exterior and interior surface,
said tube including
a first end and a second spaced end, said first end being open for insertion into the mouth of a user to induce suction in said tube, the second spaced end of said tube being closed and immersible in a liquid in a container, and
a filter element formed on the exterior surface of said tube in communication with the interior of said tube adjacent said second closed end adapted to receive liquid into said tube upon suction being induced in said tube through said first tube end while precluding any solid objects in said liquid from entering said tube.
2. The drinking straw of claim **1** wherein said filter element is a foraminous member.
3. The drinking straw of claim **2** wherein said foraminous member includes a series of holes in said tube adjacent said second, closed end.

4. The drinking straw of claim **3** wherein said holes are of a predetermined size to permit the passage of liquid into said tube but to block solid objects which may be found in said liquid from entering said tube.

5. The drinking straw of claim **4** wherein said holes are rectangular slots.

6. The drinking straw of claim **2** wherein said foraminous member includes a mesh screen adhered to the exterior surface of said tube adjacent said second end of said tube.

7. The drinking straw of claim **6** wherein said foraminous member includes a series of holes in combination with said screen mesh adjacent the second end of said tube.

8. The drinking straw of claim **1** wherein said closed end of said tube is heat sealed.

9. The drinking straw of claim **1** wherein said closed end of said tube is welded.

10. The drinking straw of claim **2** wherein said foraminous member is a conical plug inserted in said second end of said tube and includes a series of holes in the bottom thereof.

11. The drinking straw of claim **10** wherein said plug is force fitted into the second end of said tube with a conical surface thereof in contact with the interior surface of said tube end.

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