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PERSONAL WATER AND ADDITIVE APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of priority from U.S. provisional patent application Ser. No. 60/483,465 filed Jun. 30, 2003, which is hereby incorporated by reference.

STATEMENT OF GOVERNMENT INTEREST

The invention described herein may be manufactured and used by or for the Government of the United States of America for government purposes without the payment of any royalties therefor.

BACKGROUND OF THE INVENTION

The invention relates in general to personal hydration devices and in particular to personal hydration devices that provide for the addition of substances into the personal water supply of an individual.

Water is essential for good health. Individuals undergoing physical exertion, in particular soldiers, athletes and the physically active members of the public, have increased water consumption needs and thus often require a personal hydration device to maintain the necessary level of hydration. In addition, it can be advantageous to introduce other substances into the drinking water for purposes such as taste enhancement, electrolyte or essential salt replacement, nutritional support, etc.

There may be several obstacles to sustaining hydration, electrolyte balance and energy status. For example, chlorinated or iodinated water commonly does not taste good thereby inhibiting water consumption. Attempting to improve electrolyte balance by simply adding sodium to chlorinated water, without flavoring, brings out the unpleasant taste of chlorine. The taste of water can be improved by adding flavorings, but flavorings almost instantly destroy residual chlorine and compromise resistance to contamination. The food intake of soldiers and other physically active people in the field is often inadequate. For example, soldiers in the field typically consume an inadequate amount of carbohydrate. However, simply adding carbohydrate to water increases the risk of mold and bacterial growth inside a personal bladder-type water reservoir. The bacterial contamination of water can cause diarrhea.

Some known devices for personal hydration with additives require a separate drink container, for example, a canteen cup, to mix the drink ingredients. In other devices, the additive is added directly to the water reservoir, thereby contaminating the water reservoir and/or compromising water resistance to contamination.

In the present invention, a separate drink container is not required for mixing the additive with the water. In addition, the user is not required to physically add water to the additive or vice versa before consumption. Furthermore, the present invention does not contaminate the water reservoir or compromise water resistance to contamination.

Typical personal bladder-type hydration systems comprise a water reservoir with a tube leading to a bite valve. The present invention improves on prior systems by allowing additives to be mixed with water just prior to being drawn through the bite valve into the user's mouth. Also, a check valve prevents contamination of the water in the reservoir. Thus, the invention provides additives to water in a manner

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that does not contaminate the water reservoir or compromise water resistance to contamination.

The invention enables the user to consume the nutrients or additives necessary for the chosen activity. The additives may include flavoring, macronutrients (i.e., carbohydrate, protein, fat), micronutrients (e.g., electrolytes, minerals, vitamins), aspirates, oral medications or other dietary supplements. In addition, the primary fluid may be something other than water, for example, a beverage.

Further objects, features and advantages of the invention will become apparent from the following detailed description taken in conjunction with the following drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

Throughout the Figures, reference numerals that are the same refer to the same features.

FIG. 1 is a schematic view of one embodiment of the invention.

FIG. 2 is a partial perspective view of the embodiment of FIG. 1.

FIG. 3 is a sectional view of the manifold of the embodiment of FIG. 1.

FIG. 4 is a sectional view of a second embodiment of a manifold.

FIG. 5 is a sectional view of a third embodiment of a manifold.

FIG. 6 is a sectional view of a fourth embodiment of a manifold.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An important purpose of the invention is to introduce an additive into a personal water supply in such a way as to prevent contamination of the water reservoir by the additive. The invention enables the user to consume the additives necessary for their chosen activity while maintaining a reservoir supply of uncontaminated water. The composition of the additives is highly versatile and may include those specific to exercise such as electrolytes, flavoring, carbohydrates, vitamins, etc. Additionally, the device may be used to administer oral medications or dietary supplements. The additives may be in solid form, for example, granules or tablets, or in liquid or gel form.

FIG. 1 is a schematic view of one embodiment of a personal water and additive apparatus 10 according to the invention. FIG. 2 is partial perspective view of the embodiment of FIG. 1. In FIG. 2, the water container 12 is not shown. FIG. 3 is a sectional view of the manifold 20 of the embodiment of FIG. 1.

Referring now to FIGS. 1-3, apparatus 10 includes a first container 12 connected to a manifold 20 by a first tube 14. Container 12 is capable of holding liquid and includes a fill opening 36 and an outlet 34. Preferably, container 12 is of the collapsible bladder type. Container 12 is filled with water 30. Second container 16 is connected to manifold 20 by a second tube 18. Container 16 is capable of holding liquid and preferably is a collapsible bladder type container. Container 16 is filled with additive 32 that will be mixed with water 30 from container 12. Second container 16 has a volume smaller than the first container 12, preferably less than half the volume of the first container 12.

As shown in detail in FIG. 3, manifold 20 includes a water passageway 22 and an additive passageway 24. The water passageway 22 and additive passageway 24 intersect to form a single mixing passageway 46. In some embodiments, the