

PERSONAL FLUID DISPENSING DEVICE**BACKGROUND OF THE INVENTION****1. Technical Field**

This invention relates generally to personal fluid dispensing devices, and more particularly to an electrically powered hand-portable dispensing device for potable beverages.

2. Discussion

It is often desirable and/or necessary during many activities, especially strenuous physical activities, and within many environments, such as unusually warm or dry environments, to replenish body fluids that are lost through natural processes. This is especially true during strenuous exercise and work activities, and during prolonged exposure to the sun, where dehydration is accelerated through increased perspiration. Many activities also take people to locations where a convenient fluid refreshment supply is not available, as is the case for many remote outdoor recreational and work activities. For these and other reasons, many persons, such as athletes, persons involved in strenuous work activities and persons exposed to warm environments, choose to bring hand-portable fluid containers with them during their various activities.

Many times, however, the use of a hand-portable fluid container which must be carried by hand or moved by hand between different locations is not convenient or practical. For example, many work and exercise activities require the use of both hands for other purposes or require that the hands be kept free for safety or for balance. In many situations it may even not be convenient to require the periodic use of one hand to relocate a hand-portable fluid container so that it remains near a person who is moving about frequently from location to location. This is especially true during exercise and other physical activities involving continuous movement. In these and other situations, there also may not be any convenient nearby surface for placing such a fluid container. Therefore, it has become desirable to have a device whereby fluid may be carried in a portable manner without the need for repeated occupation of one or more hands.

Developments which have occurred in the area of portable fluid containers have included several hand-portable fluid containers that are mountable upon an associated structure, such as a bicycle, or have been located within some type of body-carried assembly. These devices have several disadvantages, however, most of which are related to the way that fluid is extracted from the fluid container for use. As a primary example, in many such devices, it is necessary to extract fluid from the fluid reservoir through the application of suction by the mouth to the end of a tube connected to the reservoir. This is inconvenient and undesirable in many applications, since in many activities, especially those involving heavy physical exertion, it is often difficult and/or energy-consuming to apply suction through a length of tube for extracting fluid from the reservoir. Some devices have attempted to reduce this disadvantage by providing some type of manual pumping means to force fluid from the reservoir through an associated dispensing tube. Such devices, however, require the user to manually operate various types of levers, bellows or other manual pumping devices, which tends to be cumbersome and/or energy-consuming, and therefore also undesirable.

Other devices have attempted to solve the disadvantage mentioned above by providing an independent pressure means, such as a pressurized gas cylinder located adjacent the fluid reservoir. This type of system has the disadvantages

of being cumbersome, heavy, and requiring replacement of the pressurized gas cylinder. In addition, this type of system sometimes requires repeated manipulation or regulation of the device components in a manner that is not quickly or conveniently accomplished, because it requires manual dexterity over time, such as in the rotary manipulation of a valve control. Other liquid delivery systems utilize gravity for providing the delivery force for liquids by positioning fluid containers at a level above the end of a flow line connected thereto so that a hydrostatic head exists between the container and the mouth of the user. One such liquid delivery system provides a container for storing liquid that is mounted to the back of a bicyclist in a backpack arrangement. This arrangement, however, requires that the backpack be in an elevated position, which occurs only where the bicyclist is in a racing position. Where the backpack is not in an elevated position, suction is required to extract fluid from the reservoir, absent some other means for fluid delivery.

It may also sometimes be desirable during the above-mentioned activities to apply water to other body surfaces, such as to the head, in order to facilitate cooling of the body. Such application cannot typically be accomplished where suction by mouth is required for extracting fluid from a reservoir. This may be accomplished, however, where a system allows for automatic delivery of fluid in a spray from a dispensing tube.

The need therefore exists for a personal fluid dispensing device that is operable to deliver fluid from a reservoir to a person's mouth or to another location of a person's body. The need further exists for such a device that is mountable upon a person's body or an associated structure, that is lightweight, easily manipulable and conveniently actuated, and does not require lengthy manual dexterity for its operation.

SUMMARY OF THE INVENTION

In accordance with the present invention, a personal fluid delivery device is provided. The device includes a pump that is operable for delivering fluid from a fluid reservoir and an electrical power supply for supplying power to the pump. A dispensing tube is disposed in communication with the pump and is operable for providing a passageway for dispensing fluid from the fluid reservoir. The personal fluid delivery device also includes an actuating device for selectively actuating the pump. The pump, electrical power supply, dispensing tube and actuating device may be disposed in communication with an existing fluid reservoir for providing selectively actuatable fluid dispensing from the reservoir. The device may also include its own fluid reservoir that is operable for containing a fluid.

An advantage of the present invention is to provide a hand-portable device, especially a body-carried device or a device mountable on an associated structure, which can supply a potable beverage for replenishing body fluids.

Another advantage of the present invention is to provide a device for supplying a fluid without the need for applying suction by mouth to a dispensing tube connected to a fluid reservoir.

A further advantage of the present invention is to provide a device for supplying a fluid without requiring a hydrostatic head between a fluid reservoir and the desired delivery location of fluid.

A further advantage of the present invention is to provide a device for supplying a fluid without the need for extensive mechanical manipulation or lengthy manual dexterity relating to components of a fluid system.