The present invention relates to a hand held hydraulic syringe and more particularly to a hydraulic syringe adapted to be utilized for the removal of food particles and the like from the teeth. More specifically, the present invention relates to the provision of a hydraulic dental syringe with a novel spray jet flow controller.

It has long been known and recently emphasized that the utilization of a toothbrush in a dental care program oftentimes leads to the compaction of food particles at points about the teeth, and particularly in a sulcus which may exist at the junction of the teeth and gums. Numerous jet spray syringes have been proposed heretofore for hydraulically dislodging and thus cleansing areas normally inaccessible to a conventional toothbrush.

It is therefore a primary object of the present invention to provide a novel hydraulic dental syringe which may be readily manipulated to hydraulically discharge foreign material adhering to the teeth and gums.

It is another object of the present invention to provide a novel hydraulic dental syringe which is adapted to be connected to a source of water under pressure, such as is available from a lavatory sink faucet, which syringe includes a novel and manipulable jet spray flow controller of relatively simple construction whereby the jet spray discharge of the syringe may be selectively controlled.

A further object of the present invention is to provide a novel hydraulic dental syringe incorporating a simple resilient pinch valve means for controlling the jet spray discharge from the syringe.

Still a further object of the present invention is to provide a novel hydraulic dental syringe having a tubular body portion which also comprises the handle of the device and is segmented at a point intermediate of its ends so as to permit the introduction of a treatment substance water soluble dentifrice, mouthwash, etc. tablet or the like within the tubular body whereby the treating agents will be progressively dissolved under the influence of the liquid flowing therethrough.

Still a further object of the present invention is to provide a hydraulic dental syringe of an improved simplified construction which may be economically manufactured.

These together with other objects and advantages which will become apparent upon examination of the following detailed description of the preferred embodiment of this invention and the appended claims should be understood to be merely illustrative of the present invention in its broad aspect and its points of novelty.
control means 32 includes a resilient tubular pinch valve member 59 formed of neoprene or the like, for example, and is so designed to be frictionally retained within the bore 36 of the nozzle portion 34. The resilient valve element 50 is provided with an integral annular lip 52 so as to sealingly engage the conical underside of the convex end of the body portion 15. Thus, as seen in FIGURE 5 fluid introduced under pressure into the interior of the body portion 12 is free to pass outwardly through the nozzle or resilient valve guide means portion 34 and its associated appropriate angular jet spray tip 35. However, when lateral pressure is applied to the nozzle portion 34, such as when grasping the device in the hand and moving the nozzle portion 34 by thumb pressure, it will be seen that the bore of the resilient valve element 50 becomes pinched closed, as seen best in FIGURE 6, thus shutting off the flow of liquid therethrough. The nozzle portion 34 may be retained in the position shown in FIGURE 6 by merely tightening the cap 40 thus substantially prohibiting the possibility of the pressure of the liquid within the interior of the body 12 from tending to return the nozzle 34 to the position shown in FIGURE 5 as the pressure attempts to distend the resilient nozzle portion 50. The nozzle portion 35 illustrated will be understood to be merely exemplary inasmuch as the specific configuration of the tip is merely a matter of choice.

Although the utilization of the hydraulic dental syringe 10 of the present invention is considered to be readily understood from the foregoing it will be seen that the hydraulic dental syringe 10 of the present invention connected to a lavatory faucet for example may be utilized to cleanse the teeth and gums by merely turning the faucet on and permitting the jet spray emanating from the nozzle tip 35 to dislodge foreign material from about the teeth and gums. When it is desired to interrupt the flow of water from the syringe it is merely necessary to apply lateral pressure to the nozzle portion 34 so as to urge it into the position shown in FIGURE 6 wherein the resilient valve element 50 is pinched closed. Under normal circumstances to resume flow it is merely necessary to remove lateral pressure from the nozzle portion 34 and the hydrostatic pressure will tend to return the nozzle to the flow position shown in FIGURE 5. However, as indicated heretofore the nozzle portion 34 may be releasably retained in the position shown in FIGURE 6 by merely tightening the cap 40.

Referring now to FIGURE 2 and as indicated hereinabove if desired, the segmented body portion 12 of the hydraulic dental syringe 10 may be selectively disconnected so as to permit the introduction of a dentifrice tablet or the like, such as shown in phantom lines, so as to permit gradual dissolving of the tablet so as to produce a beneficial solution as water flows through the body of the syringe 10.

From the foregoing, it will be apparent that there has been provided a hydraulic dental syringe of simplified construction which may be fabricated from suitable non-corrosive metal or plastic, for example, and which is relatively simple to manipulate and thus highly satisfactory for the task at hand.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A hydraulic dental syringe comprising an elongated tubular main body portion adapted to be grasped within the hand, said body portion having first and second ends, said first end being adapted to be connected to a suitable source of liquid under pressure, said second end of said body portion being generally convex and provided with a flow control means adapted to permit selective discharge of water from said second end of said body portion, a nozzle operatively carried by said flow control means whereby said nozzle may be manipulated to selectively control the discharge of a jet of liquid from said body portion, means for selectively limiting the movement of said nozzle, said limiting means including a generally convex cap threadably received in telescopic relation to said second end of said body portion whereby said nozzle is retained between said cap and said second end of said body portion in laterally shiftable flow controlling relation to said body portion, said cap being provided with an elongated aperture, said elongated aperture limiting the movement of said nozzle.

2. The combination of claim 1 wherein said tubular main body portion comprises first and second sealingly secured portions adapted to be releasably secured so as to permit introduction of a relatively soluble cleaning agent into the tubular main body portion.

3. A hydraulic dental syringe comprising an elongated tubular main body portion adapted to be grasped within the hand, said body portion having first and second ends, said first end being adapted to be connected to a suitable source of liquid under pressure, said second end of said body portion being provided with a flow control means adapted to permit selective discharge of water from said second end of said body portion and nozzle means operatively carried by said flow control means whereby said nozzle may be manipulated to selectively control the discharge of a jet of liquid from said body portion, said second end of said body portion being of a generally convex configuration, said convex end of said body portion being provided with an aperture, a generally elongated outwardly projecting resilient valve element projecting outwardly through said aperture in said convex end, a nozzle portion of generally complementary cross-sectional configuration to said resilient valve element telescopeally received thereabout, said nozzle portion having one end contiguous with and of generally complementary configuration to said convex end whereby said nozzle portion may be oscillated to pinch said resilient valve element closed, means for selectively limiting the movement of said nozzle portion, said limiting means including a generally convex cap adapted to be threadably received in telescopic relation to said generally convex end of said body portion, said cap being provided with an elongated aperture, said elongated aperture being adapted to receive and selectively limit the movement of said nozzle portion.

4. The combination of claim 3 wherein said nozzle portion is provided with a restricted orifice so as to facilitate discharge of relatively high pressure jet of liquid from said dental syringe.

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