handle 37 aligns the lateral opening 35 with the opening 32, formed by the enclosing section of wall 31, of the sample inlet system. The needle portion of a syringe (not shown), containing a measured fluid specimen, can be passed through the septum 36 and sample injected into the passageway where it is picked up by carrier gas fed into the inlet system via conduit 29. Escape of fluid is minimized, and essentially completely eliminated upon closure of valve 30. A unique feature of this embodiment for application to sample inlet systems is that the septum can be readily changed without disassembly of the sample inlet.

The simple technique by which septums can be changed in the embodiments represented by FIGS. 1 through 4, inclusively, is shown and described by reference to FIGS. 5 and 6. The plug septum 36 is thus pushed out of the opening 38 by action of the new replacement plug septum 36_1 and cylindrical rod 9. When the septum 36 is extended from the opening 38, it is easily removed with the fingers and the cylindrical rod 9 is withdrawn, leaving the new septum 36_1 in position.

The septum, if desired, can also be mounted in series separate and apart from the rotatable stem itself as shown, e.g., by reference to FIGS. 7 and 8. In these figures are thus shown rotatable stems 44, 54 mounted in tubular members 41, 51 such as may constitute the valve portion of a valve container or valve inlet system combination. In the former, the septum 46 is seated and held in place by an open centered extremely threaded member 45 which is engaged with an internally threaded counterbore contained within the top of member 41. In the latter the septum 56 is seated and held in place within a space provided in an internally threaded member 55, the threads of which mate with external threads on the member 51. In these embodiments it is apparent that the order of the stem and septum can be reversed, but preferably the septum components are located outwardly from the stem in the series. In passage of the needle through the septums, the stem is rotated to open the valve, and at all other times, as in changing the septums, the valves are closed.

The apparatus of the present invention can be constructed of essentially any material substantially inert to chemical or corrosive action by the fluid, or contained elements. The valve can be conveniently constructed of various metals, e.g., ferrous metals such as iron, iron alloys, steel, stainless steels, and the like; or e.g., glass, brass, copper, bronze, chrome, and the like. The materials can be solid or of laminar construction, and can be provided with a protective film, coated, plated, or the like, particularly those films known to be unreactive or impervious to known chemicals. Rigid and semirigid forms of plastics and plasticlike materials can also be employed, these materials being particularly desirable. The self-lubricated plastics are especially preferred in this capacity, and are also suitable for application in the form of protective films. The polyfluorinated ethylene polymers, notable among which is polytetrafluoroethylene (Teflon), are particularly outstanding.

The septums are constructed of conventional septum materials, resilient or elasticlike materials such as natural or synthetic rubber, gasket materials and the like.

It is apparent that various changes, such as in absolute or relative dimensions of the parts, materials used, and the like, as well as the suggested mode of withdrawing or delivering fluids, can be made without departing the spirit and scope of the invention, as will be apparent to those skilled in this art.

Having described the invention, what is claimed is:

1. A valve for containing fluids within a confined space comprising, in combination,

a tubular member formed by an enclosing wall providing an axial opening therethrough, the wall of said member also containing a lateral opening,

a septum which lies across, covers and seals the axial opening through the said tubular member,

a stem provided with a lateral opening therethrough rotatably mounted within the lateral opening in the wall of said tubular member

whereby rotation of said stem to align the lateral opening of the stem and the axial tubular opening provides access for withdrawal and injection of fluids by penetration of the septum, after which time misalignment of said openings closes the valve and limits such exposure for maximum confinement of the fluids within the confined space.

2. The apparatus of claim 1 wherein the septum is contained within an axial opening provided in the rotatable stem.

3. The apparatus of claim 1 wherein the septum and stem are in series.

4. The apparatus of claim 3 wherein the septum constitutes the outer member of the series.

5. The apparatus of claim 1 wherein the lower portion of the valve is flanged, the outer peripheral edge of the flange is recessed and contains an O-ring.

6. The apparatus of claim 5 wherein the O-ring is constructed of rubber.

7. The apparatus of claim 5 wherein a container is secured to the valve via an open-centered cap, the tubular portion of the valve being extended through the opening in the center of the cap, while the flanged portion is held in place atop the contained via threadable engagement between the cap and the top of the container, and whereby the downward pressure exerted by the cap causes extrusion of the O-ring against the internal surfaces of the cap and upon the lower portion of the flange to press the latter downwardly to seal the container.

8. The apparatus of claim 1 wherein the valve is provided within a sample inlet system.

9. The apparatus of claim 1 wherein the valve is constructed of a self-lubricating type of rigid plastic, with the exception of the septum which is of rubber.

10. The apparatus of claim 9 wherein the rigid plastic is Teflon.