CLAIMS

1. A nozzle, comprising a support member comprising a shaft having a shaft inlet and a shaft outlet spaced from said shaft inlet; and a nozzle boot surrounding at least a portion of said shaft of said support member, said nozzle boot having a nozzle boot inlet and a nozzle boot outlet spaced from said nozzle boot inlet and a volume between said nozzle boot inlet and said nozzle boot outlet, said nozzle boot comprising a bellows that is expandable axially, radially, or both axially and radially relative to said shaft of said surrounding supporting member upon the introduction of water pressure into said volume between said nozzle boot inlet and said nozzle boot outlet, and said bellows further being collapsible axially, radially, or both axially and radially relative to said shaft of said surrounding supporting member upon withdrawal of water pressure from said volume between said nozzle boot inlet and said nozzle boot outlet.
2. The nozzle of claim 1, wherein said nozzle boot bellows is expandable and collapsible axially and radially relative to said supporting member shaft.
3. The nozzle of claim 1, wherein said nozzle boot bellows comprises regions of smaller outer diameters

and regions of larger outer diameters in the collapsed state or expanded state, wherein the larger outer diameters have the same outer diameter as one another or have different outer diameters relative to one another.

4. The nozzle of preceding claims, wherein said support member shaft has a shoulder that minimizes axial movement of said nozzle boot as said nozzle boot is transitioning from an expanded state to a collapsed state.

5. The nozzle of preceding claims, wherein the shaft has an end that is bullet- or cone-shaped to facilitate the nozzle boot sliding back and forth over the shaft as the nozzle boot expands from said introduction of water pressure and collapses from said withdrawal of water pressure.

6. The nozzle of preceding claims, wherein said shaft in communication with a source of chemical admixture.

7. The nozzle of preceding claims, wherein said nozzle boot is in communication with a source of water pressure for expanding the nozzle boot.

8. The nozzle of preceding claims, wherein said nozzle boot bellows is positioned coaxially with respect to said shaft, said shaft further having a stop shoulder

that provides a stop for minimizing the text to which the nozzle boot retracts axially as the nozzle boot transitions from an expanded state to a contracted state.

9. A method of removing concrete from a nozzle surface, comprising providing the nozzle of preceding claims having concrete adhered to a surface of the nozzle boot bellows, and introducing pressurized water into said volume between said nozzle boot inlet and said nozzle boot outlet, thereby to expand the nozzle boot bellows axially, radially, or both axially and radially relative to said supporting member and to shed concrete adhered to said surface.

10. A system for injecting fluids into a rotatable mixer drum, comprising:

a mixer drum rotatably mounted to permit rotation about a rotation axis inclined at an orientation of 5 to 40 degrees relative to level ground and which has an oblong drum body with an inner circumferential wall connecting opposed first and second ends for defining a cavity within which to contain a fluid, one of said two opposed ends having an opening to permit loading and unloading of material from said cavity;

a source of water pressure;

the nozzle of preceding claims connected to said source of said water pressure thereby to enable expansion of said nozzle boot bellows when said water pressure is introduced into said volume between said nozzle boot inlet and said nozzle boot outlet, and to enable collapse of said nozzle boot bellows when said pressure is withdrawn from said volume between said nozzle boot inlet and said nozzle boot outlet.

11. The system of claim 10, wherein said mixer drum is a concrete mixer drum.

12. The system of claim 11, further comprising a source of a chemical admixture, and wherein said shaft comprises a shaft inlet and a shaft outlet, said shaft inlet being in fluid communication with said source of said chemical admixture.