no resistance to facilitate loading and unloading the electrode 16. When in use, pressure from the flushing fluid supplied to the flushing chamber 96 impacts the cone-shaped body 97 of the electrode seal 62, sealing the electrode seal 62 against the electrode 16.

[0035] While the embodiments are described in the context of having the second contact element 52 with the planar clamping surface 86 be movable for clamping and releasing an electrode inserted between the first and second contact elements 50, 52, it is also possible that the spindle 12 can be configured such that the first contact element 50 with the groove 82 is movable for clamping and releasing the electrode 16. In still another example, the spindle collar 54 can include a second aperture 74 and a corresponding second locking element 76 adjacent the first contact element 50, such that a clamping force is selectively applied to and released from both the first and second contact elements 50, 52 when the sleeve 44 is moved between the clamping and open positions.

[0036] As illustrated in Fig. 6, the locking element 76 is in the form of a ball and thus the locking element 76, spindle collar 54 and sleeve 44 together can form a ball lock for selectively clamping the electrode 16 between the first and second contact elements 50, 52. Alternatively, the locking element 76 can be in the form of a resilient element having a projection that extends through the aperture 74, similar to a pin or a spring lock design. In the pin or spring lock design, the sleeve 44 applies a force against the resilient element which presses the locking element projection against the second contact element 52. When the sleeve 44 is in the open position, the force on the resilient element is decreased enough to allow the resilient element to expand, withdrawing the projection away from the second contact element 52, thereby releasing the clamping pressure on the second contact element 52.

III. Conclusion

[0037] The embodiments described herein provide for a pneumatically actuated electrode holder that clamps and unclamps an electrode with spring force without the use of tools. In contrast to traditional electrode chucks which require the use of tools to clamp and unclamp the chuck and are often removed from the EDM for loading and unloading electrodes, the designs described herein allow for the use of a permanently mounted electrode holder that does not require separate tools to use. The use of spring force for biasing the sleeve into the clamping position, rather than relying on the user to tighten and/or loosen the electrode holder, reduces the risk of damaging the electrode from over or under-tightening the holder. Providing a groove in at least one of the contact elements can facilitate centering the electrode within the spindle in addition to improving the clamping pressure applied to the electrode.