

CLAIMS

1. A substrate container, comprising
a container portion including a door frame defining an opening;
a door configured to mount within said door frame;
an actuation linkage assembly including a frame, a substrate retainer assembly, and a spindle, said spindle being pivotally mounted to said frame and to said substrate retainer assembly, said frame being mounted to an interior wall of said container portion, said substrate retainer assembly being extendible into said opening of said door frame,
said actuation linkage assembly being selectively configurable in a substrate retention position wherein said substrate retainer assembly is in contact with and actuated by said door when said door is seated within said door frame,
said actuation linkage assembly being selectively configurable in a substrate non-retention position wherein said substrate retainer assembly extends into said opening of said door frame when said door is absent from said door frame; and
a biasing member operatively coupled to at least one of said frame, said spindle, and said substrate retainer assembly, said biasing member biasing said actuation linkage assembly in said substrate non-retention position.
2. The substrate container of claim 1, wherein said biasing member includes a spring arm extending from said frame and contacting one of said spindle and said substrate retainer assembly.
3. The substrate container of claim 1, wherein said biasing member includes a coil spring connected to said spindle, said coil spring being concentric about a rotational axis of said spindle.
4. The substrate container of claim 1, wherein said biasing member comprises an elastic member that extends from said frame to one of said spindle and said substrate retainer assembly.
5. The substrate container of claim 1, wherein:
said spindle is mounted to said frame at a pivot defining a pivot axis;

said biasing member includes an extended portion of said spindle that extends laterally beyond said pivot, said extended portion including a rotational stop, said rotational stop engaging one of said frame and an interior surface of said container to impart a biasing torque between said rotational stop and said spindle.

6. A substrate container, comprising
 - a container portion including a door frame defining an opening;
 - a door configured to mount within the door frame;
 - an actuation linkage assembly, including:
 - a frame mounted to an interior wall of the container portion;
 - a spindle pivotally mounted to the frame;
 - a substrate retainer assembly pivotally mounted to the spindle, the substrate retainer assembly being extendible into the opening of the door frame;
 - a wheel and axle mounted to a lower end of the substrate retainer assembly, the axle being retained to the substrate retainer assembly by a clip-in structure defined at the lower end of the substrate retainer assembly; and
 - a wheel retention clip mounted to the substrate retainer assembly and configured to prevent the axle from being released from the substrate retainer assembly, the actuation linkage assembly being selectively configurable in a substrate retention position wherein the substrate retainer assembly is in contact with the wheel and actuated by the door when the door is seated within the door frame, the wheel being configured to roll along an interior surface of the door.
7. The substrate container of claim 6, wherein the wheel retention clip includes a plurality of hook portions that couple with the substrate retainer assembly to secure the wheel retention clip to the substrate retainer assembly.
8. The substrate container of claim 7, wherein:
 - the substrate retainer assembly includes a base that defines an aperture;
 - at least one of the plurality of hook portions of the wheel retention clip being coupled to a perimeter of the aperture; and
 - the wheel retention clip includes registration structures for registering the wheel retention clip within the aperture.

9. The substrate container of claim 6, comprising a wheel yoke at the lower end of the substrate retainer assembly, the wheel and axle being mounted to the wheel yoke, wherein:

the wheel retention clip includes a plurality of hook portions that couple with the substrate retainer assembly to secure the wheel retention clip to the substrate retainer assembly;

the clip-in structure of the substrate retainer assembly includes a resilient cantilever that exerts a biasing force against the axle to retain the axle within the wheel yoke; and

the wheel retention clip is configured to prevent the resilient cantilever of the clip-in structure from deflecting, thereby preventing the clip-in structure from releasing the axle.

10. The substrate container of claim 9, wherein at least one of the plurality of hook portions of the wheel retention clip are coupled with the wheel yoke.