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Spence et al.

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(54) **PROCESSING CONTAINERS**
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(58) **Field of Classification Search**
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See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
4,683,195 A 7/1987 Mullis et al.
4,683,202 A 7/1987 Mullis
(Continued)

FOREIGN PATENT DOCUMENTS
WO WO 97/16561 5/1997
WO WO 99/57561 11/1999
(Continued)

OTHER PUBLICATIONS
U.S. Department of Health and Human Services, Guidance for Industry: Sterile Drug Products Produced by Aseptic Processing-Current Good Manufacturing Practice (Sep. 2004).
(Continued)

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(57) **ABSTRACT**
Processing containers include a first member having a substantially rigid body with a plurality of regions defining spaced apart workstations and a flexible barrier member sealably attached to the first member to define a closed chamber over the plurality of workstations. The flexible barrier is substantially impermeable and includes or is a manipulation tool that is sealably attached to the barrier. The manipulation tool has a first internal interface that resides in the closed chamber under the flexible barrier and a second external interface that resides outside the closed chamber. The processing containers are particularly suitable for automated processing of nucleic acids and other samples. The manipulation tool can cooperate with or include a pipette head. When the barrier is sealed, the barrier separates the contents of the container from a robotic arm or other manipulation device.

16 Claims, 52 Drawing Sheets

