

(12) **United States Patent**
Ivanine

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- (54) **FUMIGATION CONTROL**
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- (56) **References Cited**
- U.S. PATENT DOCUMENTS
- | | | | |
|-------------------|--------|-----------------|--------|
| 4,989,364 A | 2/1991 | Chaudoin et al. | |
| 6,256,905 B1 * | 7/2001 | White | 34/467 |
| 2003/0133834 A1 * | 7/2003 | Karle | 422/33 |
- FOREIGN PATENT DOCUMENTS
- | | | |
|----|---------------|--------|
| CN | 2112278 U | 8/1992 |
| DE | 196 07 053 C1 | 7/1997 |
- (Continued)
- OTHER PUBLICATIONS

New Zealand Examination Report issued in New Zealand Patent Application No. 594840 dated Aug. 29, 2012.
(Continued)

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(57) **ABSTRACT**

A method for fumigating an enclosed space (12) comprises the steps of containing a gaseous fumigant at a discrete location within the enclosed space (12) so as to displace a volume of gas from the enclosed space, and releasing the contained fumigant from the discrete location and into the enclosed space. The method can employ an apparatus (10) that comprises a flexible enclosure (12) that is inflatable and deflatable with a gas between an expanded configuration and a collapsed configuration. The enclosure (12) can be positioned within the enclosed space (12) prior to fumigant introduction. The apparatus (10) can also comprise an inlet (16) arranged at the enclosure to receive gaseous fumigant therethrough for inflation of the enclosure (12), as well as an outlet (20) and a valve (24) arranged at the enclosure (12). The valve (24) can open and close the outlet (20) to gas flow therethrough such that, when open, gaseous fumigant can be released from the enclosure (12) via the outlet (20) and into the enclosed space (2).

11 Claims, 6 Drawing Sheets

