Title: DEVICES AND METHODS FOR EXTRACTION, TRANSPORTATION AND/OR RELEASE OF MATERIAL

Abstract: Provided are methods and apparatuses for extracting, transporting and/or releasing various kinds of material. Generally speaking, such methods and apparatuses involve vacuum-based (or low-pressure-based) components which, in the preferred embodiments of the invention, utilize various combinations of: a gateway that functions as a valve without moving parts, flexible hoses, and/or a separator for separating the solids in the material from the liquids. Such methods and apparatuses are useful in a variety of applications, including landfill-well cleanout and home-based, laboratory-based, commercial-based and manufacturing-based applications. The tools according to the present invention generally are scalable to nearly any size.
(88) Date of publication of the international search report:
23 June 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/36631

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : E21B 27/02; B67C 3/16
US CL : 166/162; 222/152,356; 137/205

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 166/162,163,311,105.1,107; 222/152,356,457; 137/205

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 2,718,308 A (LE BUS) 20 September 1955 (20.09.1955), Figure 2, column 2, line30-column 3, line 60.</td>
<td>1-6, 8-24, 26-47</td>
</tr>
<tr>
<td>Y</td>
<td>US 1,561,049 A (BONNER et al) 10 November 1925 (10.11.1925), whole document, esp. Figure 2.</td>
<td>1-3,5,6,8-12,17-22,46,47</td>
</tr>
<tr>
<td>Y</td>
<td>US 2,401,871 A (HEETER) 11 June 1946 (11.06.1946), Figure 1, column 1, line 46-column 2 line 51, column 3 lines 39-46.</td>
<td>1-6, 8-24, 26-47</td>
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<tr>
<td>Y</td>
<td>US 5,772,402 A (GOODMAN) 30 June 1998 (30.06.1998), Figure 4, column 5, line 5-column 6, line 65.</td>
<td>4,23,24,26-34,40-45</td>
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<tr>
<td>A</td>
<td>US 2,783,716 A (VARNER) 5 March 1957 (05.03.1957), whole document.</td>
<td>1-47</td>
</tr>
<tr>
<td>A</td>
<td>US 2,627,926 A (HENRY) 10 February 1953 (10.02.1953), whole document.</td>
<td>1-47</td>
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<tr>
<td>A</td>
<td>US 2,465,563 A (ABRAMS) 29 March 1949 (29.03.1949), whole document.</td>
<td>1-47</td>
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Date of the actual completion of the international search: 04 April 2005 (04.04.2005)

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Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer
David J. Bagnell
Telephone No. (571) 272-5150

Form PCT/ISA/210 (second sheet) (July 1998)
Continuation of B. FIELDS SEARCHED Item 3:
JPO, EPO, Derwent

terms: trap, vacuum, tube/tubular, drain, fluid, debris