



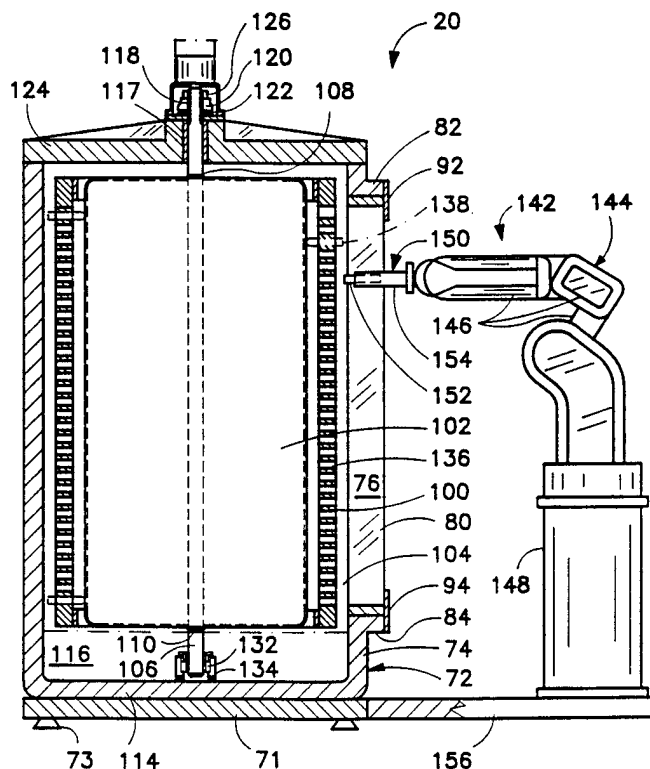
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : F25D 23/12, 25/00, 25/02; F25B 19/00</p>	A3	<p>(11) International Publication Number: WO 98/43592</p> <p>(43) International Publication Date: 8 October 1998 (08.10.98)</p>
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(54) Title: STORAGE APPARATUS, PARTICULARLY WITH AUTOMATIC INSERTION AND RETRIEVAL

(57) Abstract

A storage unit includes a housing (72) with a storage chamber, a carrier (100) disposed inside the chamber for supporting a plurality of specimens (138) in a predetermined array, and an access port (76) on the housing (72) for enabling access to the chamber for insertion and retrieval of specimens (138) from the carrier (100). The access port (76) includes an opening in the housing (72) and a plug member (86) removably located in the opening. The carrier (100) is provided with a seat (194) for receiving the plug member (86) during an access operation, so that the plug member (86) is located in the chamber during the access operation. A drive is operatively connected to the carrier (100) for moving the carrier (100) in the chamber to juxtapose different specimens (138) to the access port (76). An insertion and removal mechanism (142) is coupled to the housing (72) for alternately inserting and removing specimens (138) from the chamber via the access port (76) during the access operation.



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INTERNATIONAL SEARCH REPORT

International application No. PCT/US98/06140

A. CLASSIFICATION OF SUBJECT MATTER IPC(6) :F25D 23/12, 25/00, 25/02; F25B 19/00 US CL :62/51.1, 62, 337, 381 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. : 62/51.1, 62, 337, 381 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)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 5,638,686 A (COELHO et al.) 17 June 1997 (17.06.97), see entire document.	1-2, 9, 13-17
A	US 5,233,844 A (KNIPPSCHEER et al.) 10 August 1993 (10.08.93), see entire document.	1-33
A	US 5,176,202 A (RICHARD) 05 January 1993 (05.01.93), see entire document.	1-33
A	US 3,787,699 A (MENACHEM et al.) 22 January 1974 (22.01.74), see fig. 1 and the abstract.	1-33
A	US 3,004,408 A (DROS et al.) 17 October 1961 (22.01.74), see fig. 1.	1-33
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
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"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 20 JULY 1998	Date of mailing of the international search report 13 OCT 1998	
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer <i>my mas</i> CHRISTOPHER KILNER Telephone No. (703) 308-0275	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/06140

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2,695,729 A (HORNISH) 30 November 1954 (30.11.54), see fig. 3.	1-33

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US98/06140

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: 34
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

the claim is incomplete since page 28 was not filed with the application.

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.