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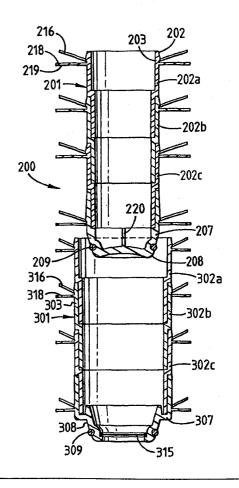
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(54) Title: PLUG AND PLUG SET FOR USE IN WELLBORE

(57) Abstract

A plug for use in a wellbore, said plug (201; 301) having a body with an upstream end and a downstream end, characterised in that a major portion of the length of said body is hollow and open to the upstream end of said plug. A plug set for use in a wellbore, said plug set comprising a top plug and a bottom plug, characterised in that a major portion of the volume of said bottom plug is hollow and a major portion of the length of said top plug can be accommodated therein. A plug for use in a wellbore, said plug comprising a body and at least a first fin which is made of resilient material and which projects radially outwardly from said body to engage, in use, the inner wall of a tubular, characterised in that said first fin is segmented and is provided with means to inhibit liquid passing through the gaps between said segment. The body and fin(s) of the plug can be made as a one piece injection moulding. Alternatively, the plug may be of modular construction, each module comprising a body part and a fin and each module being separately injection moulded.



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Inter ional Application No PCT/GB 99/03015

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 E21B33/16

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) IPC 7 E21B B08B

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 practical, search terms used)

C. DOCUME	ENTS CONSIDERED TO BE RELEVANT	
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Α	US 2 717 645 A (S.B.SCHNITTER) 13 September 1955 (1955-09-13) figures 1-3	1
A	US 1 527 749 A (E.F. RAYMOND) 24 February 1925 (1925-02-24) figures 1,2	1
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X Further documents are listed in the continuation of box C.	Patent family members are listed in annex.		
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	 *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 *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family 		
Date of the actual completion of the international search	Date of mailing of the international search report		
28 January 2000	2 5. 04. 2000		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Fonseca Fernandez, H		

Inter. ..onal Application No
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	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	
ategory °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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International application No. PCT/GB 99/03015

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This International Search 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:
Claims Nos.: 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:
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:
see additional sheet
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.
X No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-4,15-18

A plug for use in a wellbore for cementing casings having at least a first fin projecting radially outwardly, where said fin is segmented and having means to inhibit liquid passing through the segmenting gaps

2. Claims: 5-6

A plug for use in a wellbore having a body with an upstream and a downstrean end and having hollow a major portion of the length of said body.

3. Claims: 7-14

A plug set for use in a wellbore comprising a top plug and a bottom plug and where a major portion of the bottom of the top plug can be accommodated in a hollow portion of the bottom plug.

Information on patent family members

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PCT/GB 99/03015

				33/03013
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