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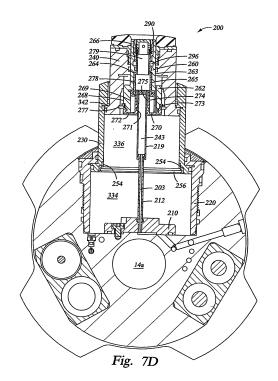
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(54) Downhole probe assembly

(57)This application relates to a downhole formation testing tool having an extendable sample apparatus and methods of use. In one embodiment, the extendable apparatus includes a piston that extends toward a borehole wall (49), the piston having an inner sampling member that is also extendable. The sampling member may be further extended to engage the borehole wall and penetrate the formation. The sampling member may also include a screen and an inner scraper (278) that frictionally engages the screen and reciprocates to remove debris from the screen. The piston may comprise a seal pad having an internal cavity for receiving a volume of fluid. In another embodiment, the extendable apparatus comprises multiple, concentric pistons for extending the sampling member further toward the borehole wall than is possible with a single piston. In one embodiment, the formation testing tool includes a hydraulic circuit and controller for operating the extendable sample apparatus; the tool may also include hydraulic accumulators and a regenerative hydraulic circuit.



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DOCUMENTS CONSIDERED TO BE RELEVANT

WO 03/097999 A1 (HALLIBURTON ENERGY SERV INC [US]) 27 November 2003 (2003-11-27) * page 8, lines 11-18 * * page 9, line 29 - page 10, line 2 * * page 18, line 28 - page 22, line 22 * * figures 2D,3,3A,3B,5,6A-6C,10 *

Citation of document with indication, where appropriate,

of relevant passages



Category

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EUROPEAN SEARCH REPORT

Application Number

EP 14 16 1780

CLASSIFICATION OF THE APPLICATION (IPC)

TECHNICAL FIELDS SEARCHED (IPC)

E21B

Examiner

Schouten, Adri

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E21B49/10

Relevant

to claim

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The present search report has	been drawn up for all claims
Place of search	Date of completion of
Munich	22 Septemb
CATEGORY OF CITED DOCUMENTS	T : theo E : earli
X: particularly relevant if taken alone Y: particularly relevant if combined with anot document of the same category A: technological background	after D : docu L : docu
O : non-written disclosure P : intermediate document	& : mem docu

T : theory or principle und E : earlier patent documer	
z . oamer patem accume	it, but publication on, or

after the filing date

D: document cited in the application

L: document cited for other reasons

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Date of completion of the search

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[&]amp; : member of the same patent family, corresponding document

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-09-2016

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
15	WO 03097999 A1	27-11-2003	AU 2003231797 A1 BR 0310096 A CA 2484902 A1 EP 1514009 A1 NO 336715 B1 US 2005072565 A1 US 2007181341 A1 WO 03097999 A1	02-12-2003 27-04-2007 27-11-2003 16-03-2005 26-10-2015 07-04-2005 09-08-2007 27-11-2003
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82