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(54) **Downhole seal circulating devices.**

(57) A cup-type seal circulating device (10) or a compression type packer seal circulating device for use in running a string of casing into a well bore, has a connector member (12) for connection to the drilling rig equipment to allow fluid to be pumped into the device ; a seal body member (14) ; a seal assembly (16) and a check valve (18). The circulating device is received in casing (22) and the seal assembly seals between the seal body member and the casing (22).

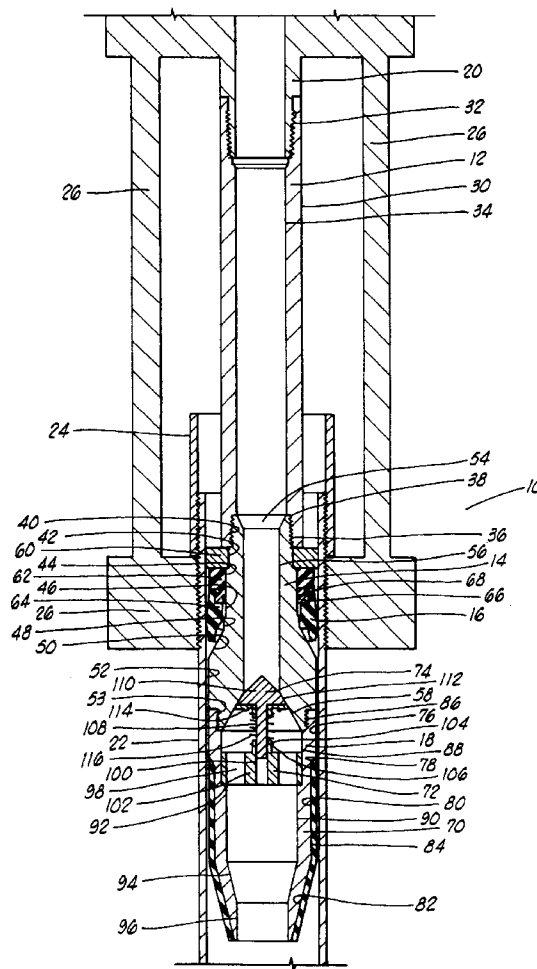


FIG. 1

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EUROPEAN SEARCH REPORT

Application Number

EP 92 31 0533

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X A	US-A-4 961 465 (BRANDELL) * abstract; figure 3 * ---	1-3,5 4	E21B33/126 E21B33/068 E21B33/128
D,Y	US-A-4 718 495 (HALLIBURTON) * column 2, line 66 - column 3, line 6 * * column 11, line 34 - column 60; figures 1,4B * ---	6-10	
Y	US-A-4 993 489 (MCLEOD) * column 3, line 56 - column 4, line 20; figure 1 * ---	6-10	
Y	US-A-4 151 875 (SULLAWAY) * column 5, line 236 - line 35; figure 1 * ---	10	
A	US-A-3 867 984 (DUFRENE) * figures 1-6 * ---	1-4	
A	CA-A-1 272 684 (SUTHERLAND) * claim 1; figure 4 * ---	1-4	
A	US-A-3 830 304 (CUMMINS) -----		TECHNICAL FIELDS SEARCHED (Int. Cl.5) E21B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 JUNE 1993	Examiner Héctor Fonseca
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

See sheet -B-

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-5 : Cup type seal circulation device for filling and circulating fluids through well casings
2. Claims 6-10: Compression type packer seal for filling and circulating fluids through well casings