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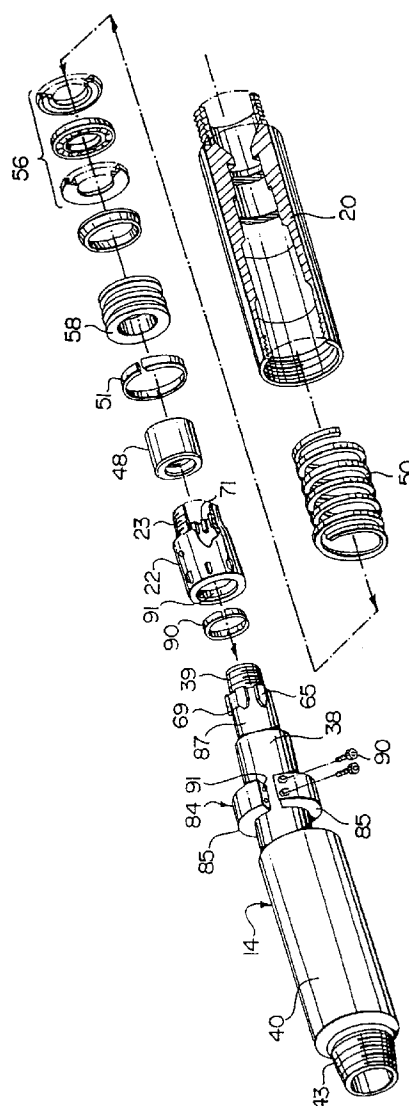
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(54) **Adjustable bent sub.**

(57) There is described an adjustable bent sub comprising a cylindrical housing (12) having a first uphole portion (20) and a second downhole portion (22), the up and downhole portions being axially offset to one another, a tubular mandrel (14) having a first uphole end (39) and a second downhole end (43), the up and downhole ends being axially offset to one another, the uphole end of the mandrel being receivable within the housing means for longitudinal and rotational movement relative thereto, connectors (65,71) provided between the mandrel and the housing to prevent the relative rotation thereof when the mandrel is in a first locked position relative to the housing, a lock (84) actuatable to maintain the mandrel in a first locked position thereof or to release the mandrel for longitudinal movement thereof relative to the housing into a second unlocked position in which the mandrel and housing are free to rotate relative to one another, a piston (58) concentrically disposed in the housing for longitudinal movement relative thereto, and a spring (50) concentrically disposed in the housing for biasing the piston into contact with an end of the mandrel, wherein the rotation of the mandrel relative to the housing increases or decreases the amount of bend in the bent sub between predetermined limits.



**FIG.2**



European Patent  
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# EUROPEAN SEARCH REPORT

Application Number

EP 91 30 5677

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	US-A-4 745 982 (WENZEL) * column 5, line 37 - column 45 *	20	E21B7/06
A	---	1	
X	US-A-4 596 294 (RUSSEL) * column 4, line 12 - line 35 *	20	
A	---	1	
X	US-A-4 303 135 (BENOIT) * column 7, line 22 - line 30 * * column 8, line 63 - column 9, line 10 *	20	
A	---	1	
A	US-A-4 884 643 (WAWRZYNOWSKI) * abstract *	1,20	
E	EP-A-0 497 421 (SCHLUMBERGER) * column 7, line 42 - column 8, line 27 * * column 5, line 51 - line 53 * * column 6, line 5 - line 8 *	1-4,20	
E	US-A-5 052 501 (WENZEL) * the whole document *	20	<div>TECHNICAL FIELDS SEARCHED (Int. Cl.5)</div> <div>E21B</div>
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 OCTOBER 1992	Examiner SOGNO M.G.
<div>CATEGORY OF CITED DOCUMENTS</div> <div> 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 </div> <div> 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  &amp; : member of the same patent family, corresponding document </div>			

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