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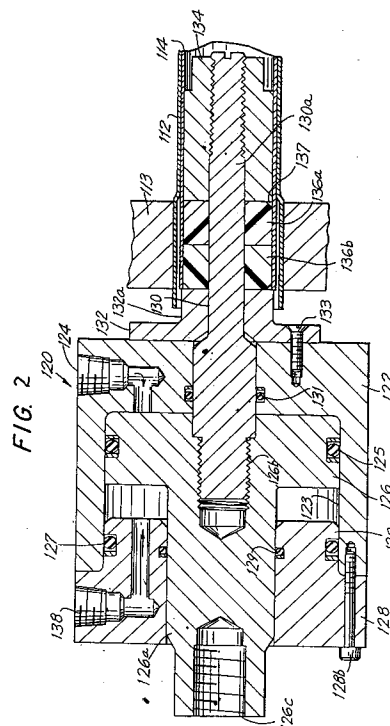
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07.04.93 Bulletin 93/14(71) Applicant: **FOSTER WHEELER ENERGY
CORPORATION**
Perryville Corporate Park
Clinton New Jersey 08809-4000(US)(72) Inventor: **Rabe, George B.**
2 Fairway Trail
Sparta New Jersey(US)
Inventor: **Johnson, Robert Harold**
6 Bridle Lane
Budd Lake New Jersey(US)(74) Representative: **Hitchcock, Esmond Antony**
Lloyd Wise, Tregear & Co. Norman House
105-109 Strand
London WC2R 0AE (GB)(54) **Method of apparatus for expanding and sealing a sleeve into a surrounding tube.**

(57) A pressurizable tool (120) for locating a sleeve (114) within a surrounding tube (112) and pressure-tightly sealing the sleeve within the tube to repair leaks in the tube. The tool includes a housing (122) containing an axially movable piston (126) and a forward reduced diameter portion (130) and having an elastic expander unit (136) for inserting into the sleeve and tube in a tubesheet. The expander unit consists of at least two elastic rings (136a, 136b) composed of an elastomer material and each having a chamfer (137) provided at the outer edge of the unit forward and rear faces. By pressurizing a port (124) at the housing front end, the piston (126) is moved rearwardly to axially compress and expand the expander rings (136a, 136b) radially outwardly sufficiently to expand the sleeve (114) firmly into the tube (112) and provide a pressure-tight seal therebetween. Following such expansion of the sleeve, the piston is pressurized and moved forward to release the compression on the expander unit rings, so that the tool can be easily withdrawn from the expanded sleeve and tube and inserted into another sleeve and tube for repeated usage.

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EUROPEAN SEARCH REPORT

Application Number

EP 92 11 1095

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.4)
A	US-A-4 006 619 (J.H. ANDERSON) * Figures 1,2,7-9; column 2, line 62 - column 3, line 34; column 4, lines 35-54; claim 1 * ---	1-4	B 21 D 39/20 B 21 D 39/08 B 21 D 39/04 B 23 P 19/02
A,D	US-A-4 387 507 (J.W. KELLY) * Figure 2; Column 4, lines 5-53 * ---	1,6,7	
A	US-A-4 607 426 (J.W. KELLY) * Figures 1-2; column 3, lines 1-17 * ---	1,2,7	
A	US-A-2 458 854 (H.E. HULL) * Figures 1-5 * ---	1-5	
A	FR-A-2 345 243 (COMBUSTION ENGINEERING) * Figure 3; page 5; claim 5 * ---	1	
A	GB-A-2 074 914 (NUOVO PIGNONE S.p.A.) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			B 21 D B 23 P
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-01-1993	Examiner BOMBEKE M J P
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			