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Slider et al.

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[54] **SELF-REMOVING CHOKE INSERT SYSTEM**

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[52] **U.S. Cl.** **166/378**; 166/348; 166/382

[58] **Field of Search** 166/348, 380, 166/382, 386, 387, 368, 117.5, 217, 344

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,589,667	6/1971	Lewis	166/97.1 X
4,083,409	4/1978	Barrington	166/320
4,446,922	5/1984	Bowyer et al.	166/322
4,540,053	9/1985	Baugh et al.	166/348
4,615,544	10/1986	Baugh	166/348 X
4,749,046	6/1988	Gano	166/366
4,796,698	1/1989	Gano	166/135
4,919,459	4/1990	Miller	285/140
4,926,898	5/1990	Sampey .	
5,044,432	9/1991	Cunningham et al.	166/319

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[57] **ABSTRACT**

A subsea choke assembly for a well has a resilient closure seal within it which is used for retrieval purposes as well. The closure member is a metal resilient ring having tapered seal surfaces. The tapered seal surfaces locate between the choke body housing and the choke body bonnet. When securing the bonnet to the housing, the resiliency of the closure seal must be overcome, as well as the force required to insert an inner seal into its sealing surface within the bore. When the bonnet is released, the closure seal has sufficient spring force to push itself upward from the housing. In addition, it pushes the bonnet upward from closure seal. The choke body moves upward in unison with the bonnet, freeing the inner seal from its sealing surface.

16 Claims, 3 Drawing Sheets