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Kirschner et al.

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[54] **SPOOLED TAPE SEAL FOR UNDERWATER GUN OPERATION**

4,671,163 6/1987 Erikson 89/1.81
4,848,209 7/1989 Almeras 89/1.14

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FOREIGN PATENT DOCUMENTS

387199 7/1908 France 89/5
2424480 12/1974 Germany 89/1.817
94041 3/1852 United Kingdom 89/5
2074296 10/1981 United Kingdom 89/1.817

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[57] **ABSTRACT**

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[58] **Field of Search** 42/1.14; 89/1.809,
89/1.81. 1.817, 5. 31; 102/399

The present invention relates to an underwater weapon having a system for sealing the opening of a gun barrel to prevent the ingress of water. The sealing system includes a non-metallic or metallic tape for covering and sealing the opening and a mating surface on the gun barrel against which the tape is seated to prevent the ingress of water. The sealing system further includes sprockets for advancing the tape across the opening of the gun barrel and for maintaining the tape in a taut position during operation.

[56] **References Cited**

U.S. PATENT DOCUMENTS

45,020 11/1864 Cleu 89/31
3,077,143 2/1963 Draim et al. 89/1.809
3,323,457 6/1967 Biehl et al. 42/1.14

17 Claims, 3 Drawing Sheets

