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(54) **SUBMARINE ANTENNA ASSEMBLY FOR DEPLOYMENT THROUGH ICE LAYER**

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* cited by examiner

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(57) **ABSTRACT**

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A submarine antenna assembly comprises a tubular body having a removable end cap, a mast stowable in the body and extendible therefrom and having elements mounted thereon, a penetrator stowable in the body and movable therefrom by the mast upon removal of the end cap, the penetrator being adapted to bore through an ice layer, and an inflatable ring stowable in the body and movable therefrom by the mast upon the removal of the end cap. First and second capsules are in the body for retaining and releasing gas, the first capsule being adapted upon opening thereof to pressurize the body to blow off the end cap to permit movement of the mast, the ring, and penetrator out of body, and the second capsule being adapted to inflate the ring to hold the penetrator in engagement with an undersurface of the ice layer. An electronics assembly is disposed in the body and includes message retention and transmitting means in communication with the mast, and timer means in communication with the capsules. A spool is mounted in the mast and a tether is wound on the spool and is fixed at a first end to the spool and at a second end to the body. A clutch is engageable with the spool to stop rotation of the spool, whereby to stop paying out of the tether from the spool, the clutch means being activated by the penetrator breaking through the layer of ice.

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(58) **Field of Search** **343/704, 709, 343/710; 175/11, 14, 17, 18; 342/385, 386; 248/168, 169, 170, 171; 299/14, 24; 441/3, 11, 30; H01Q 1/34**

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14 Claims, 6 Drawing Sheets

