

# United States Patent [19]

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Kirby et al.

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[54] **REMOTELY-CONTROLLABLE PARAVANE**

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[21] Appl. No.: **884,135**

[22] Filed: **Jul. 9, 1986**

[51] Int. Cl.<sup>4</sup> ..... **B63B 21/66**

[52] U.S. Cl. .... **114/244; 114/246;  
114/253**

[58] Field of Search ..... **367/16, 17, 18;  
114/242, 244, 245, 246, 253**

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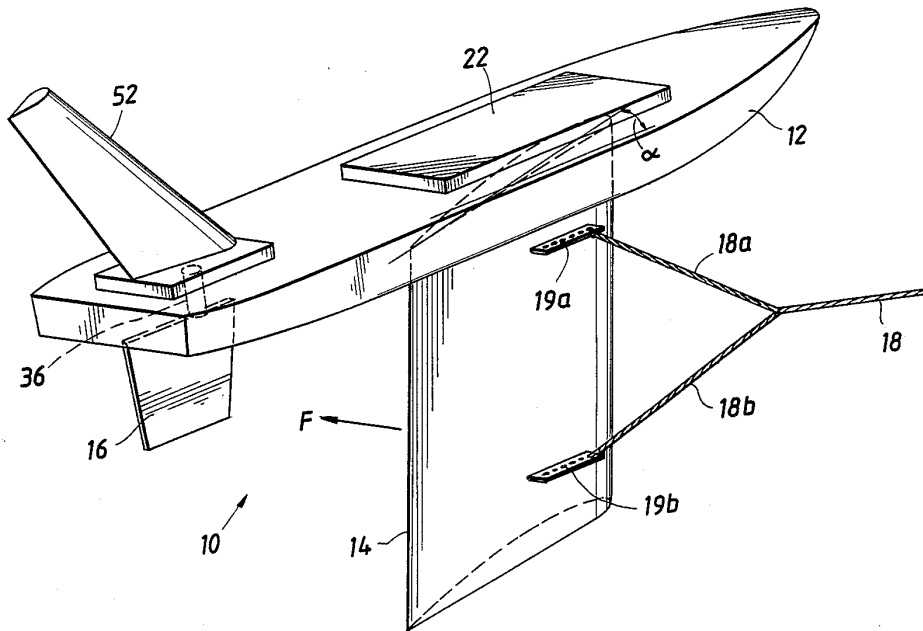
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*Assistant Examiner*—Ian J. Lobo  
*Attorney, Agent, or Firm*—Keith A. Bell

[57] **ABSTRACT**

A remotely-controllable, surface-referenced paravane for use in towing an object in a body of water at a controlled lateral offset from the pathway of the towing vessel is disclosed. The principal components of the paravane are a buoyant hull, a cambered hydrofoil shaped keel attached to the bottom of the hull and extending generally downwardly into the body of water, a remotely-controllable steering means, and a tow cable which connects the paravane to the towing vessel. Passage of the cambered hydrofoil shaped keel through the water generates a lateral force, similar to the lift generated by an airfoil, which causes the paravane to move laterally away from the pathway of the towing vessel in the direction of the lateral force. The remotely-controllable steering means is used to compensate for changes in the speed of the towing vessel or variations in wind, waves, or currents so as to maintain the lateral offset of the paravane within certain limits. The paravane may be constructed so as to move laterally to the left (a "port" paravane) or to the right (a "starboard" paravane). The only difference between a port paravane and a starboard paravane is in the cross section of the cambered hydrofoil shaped keel, with one being the "mirror image" of the other.

**10 Claims, 8 Drawing Figures**



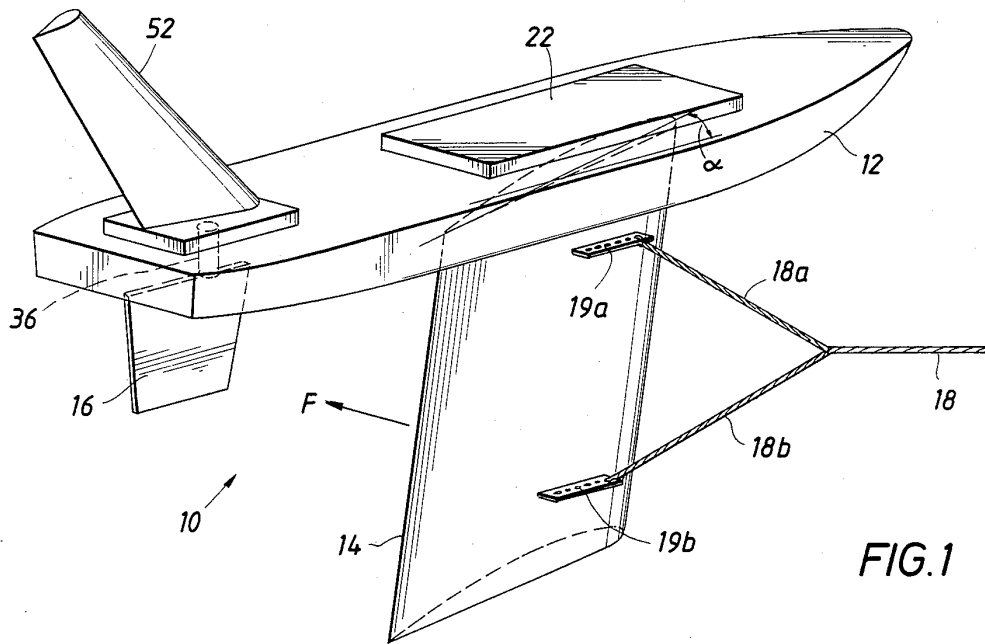


FIG. 1

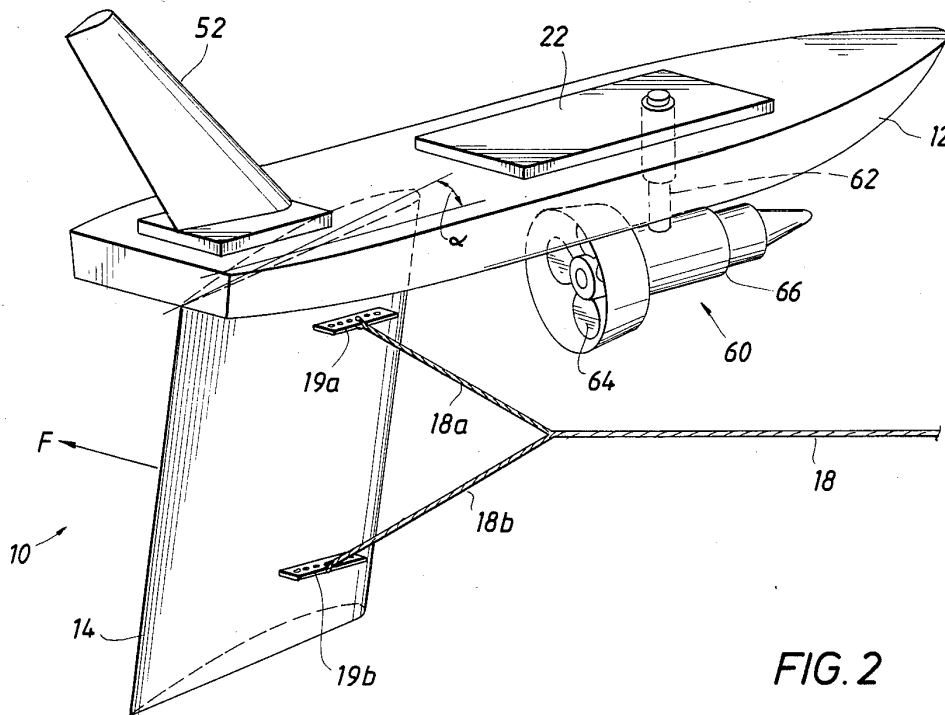


FIG. 2

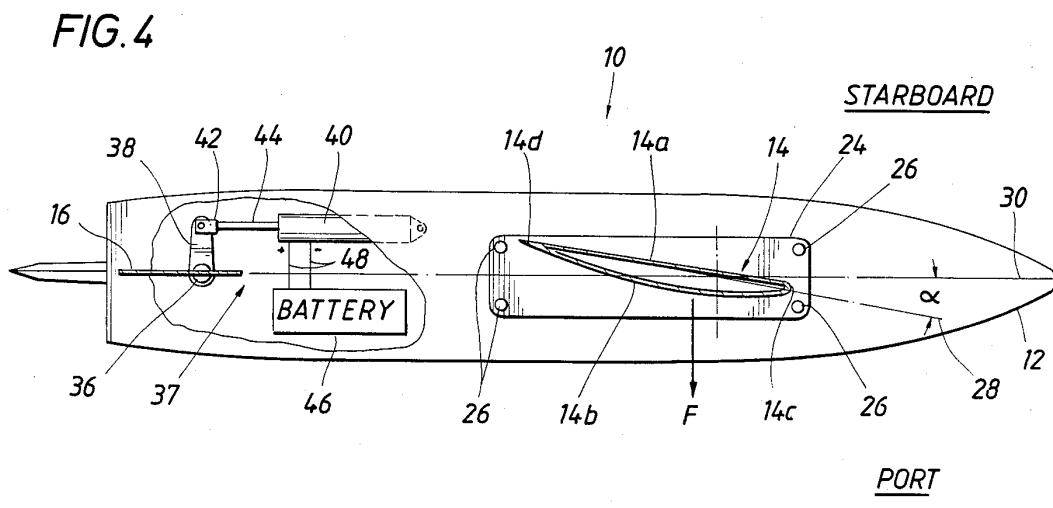
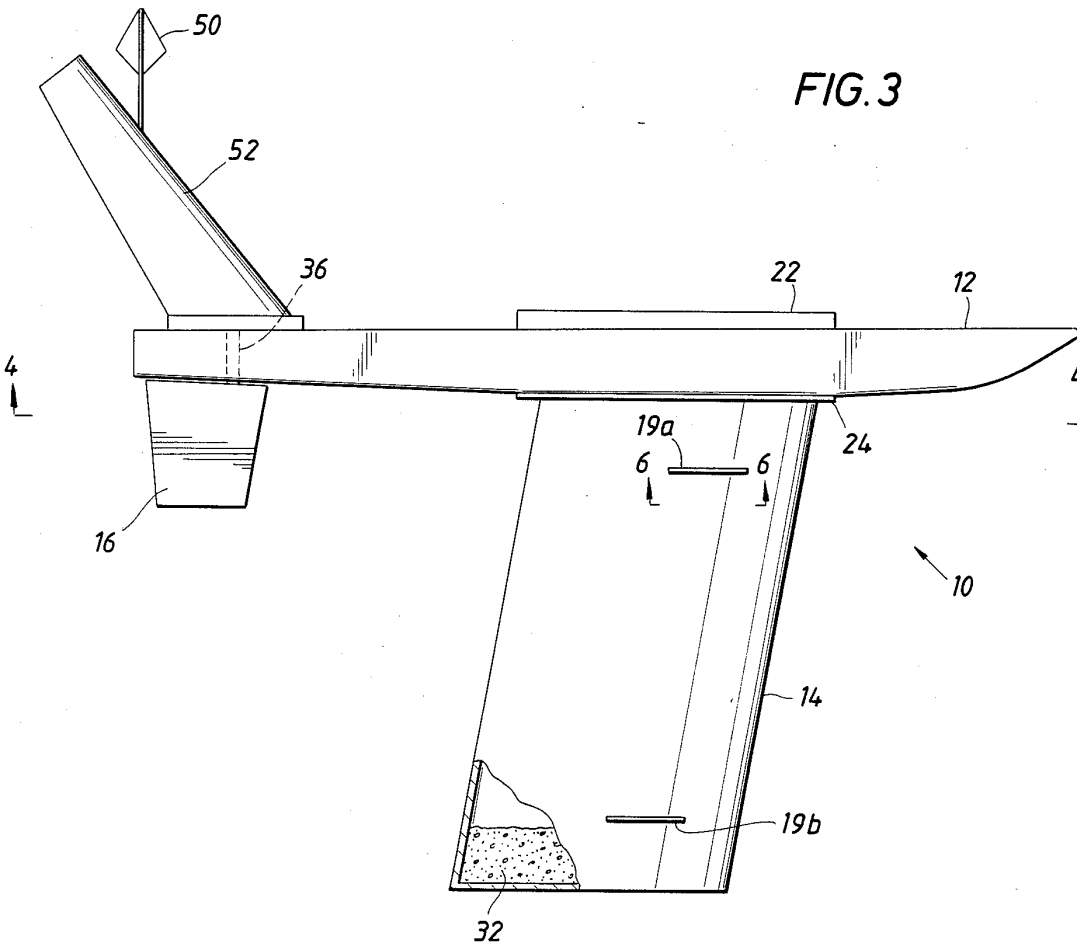


FIG. 5

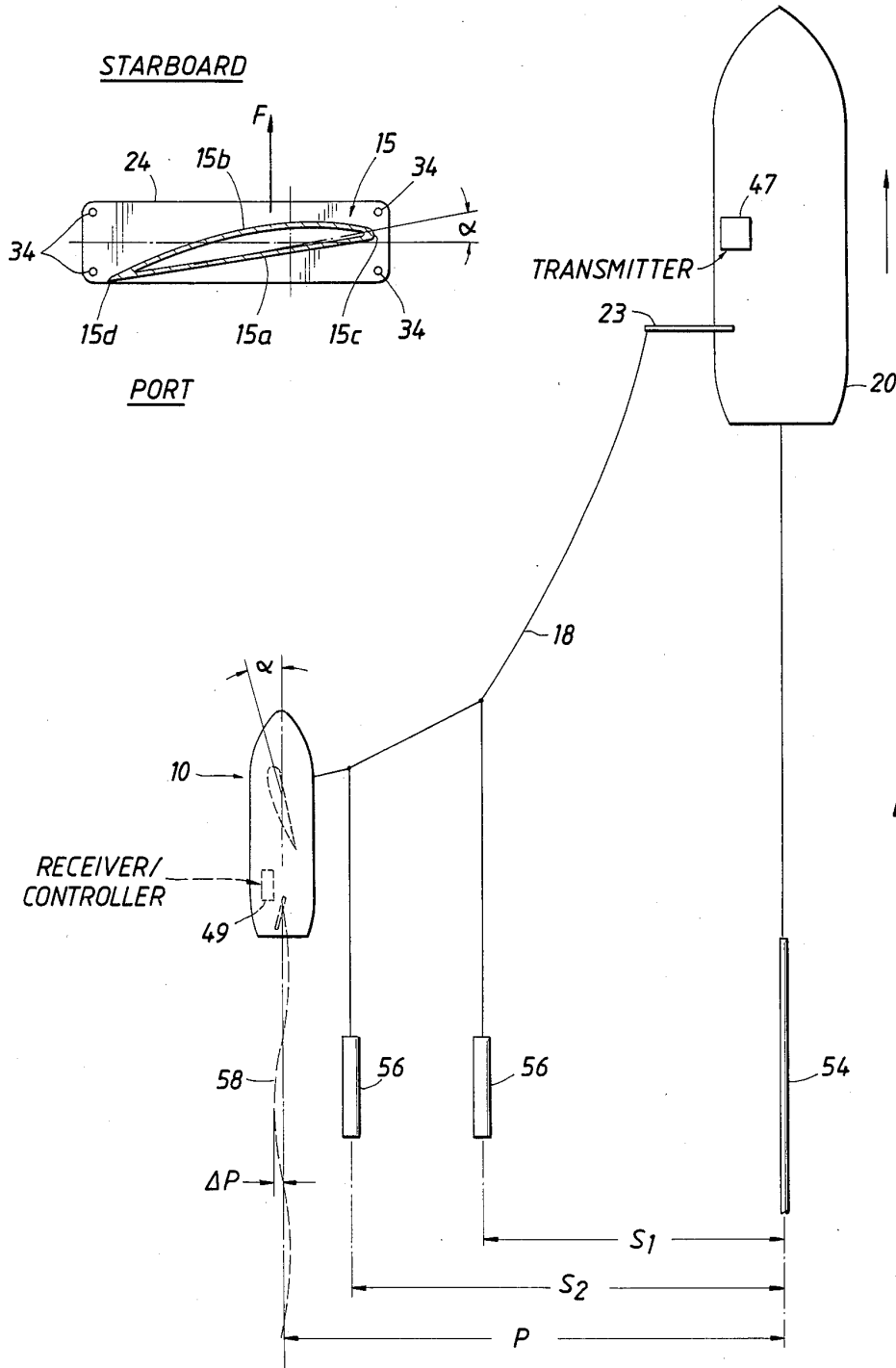


FIG. 6

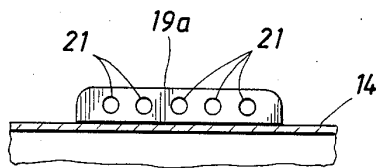
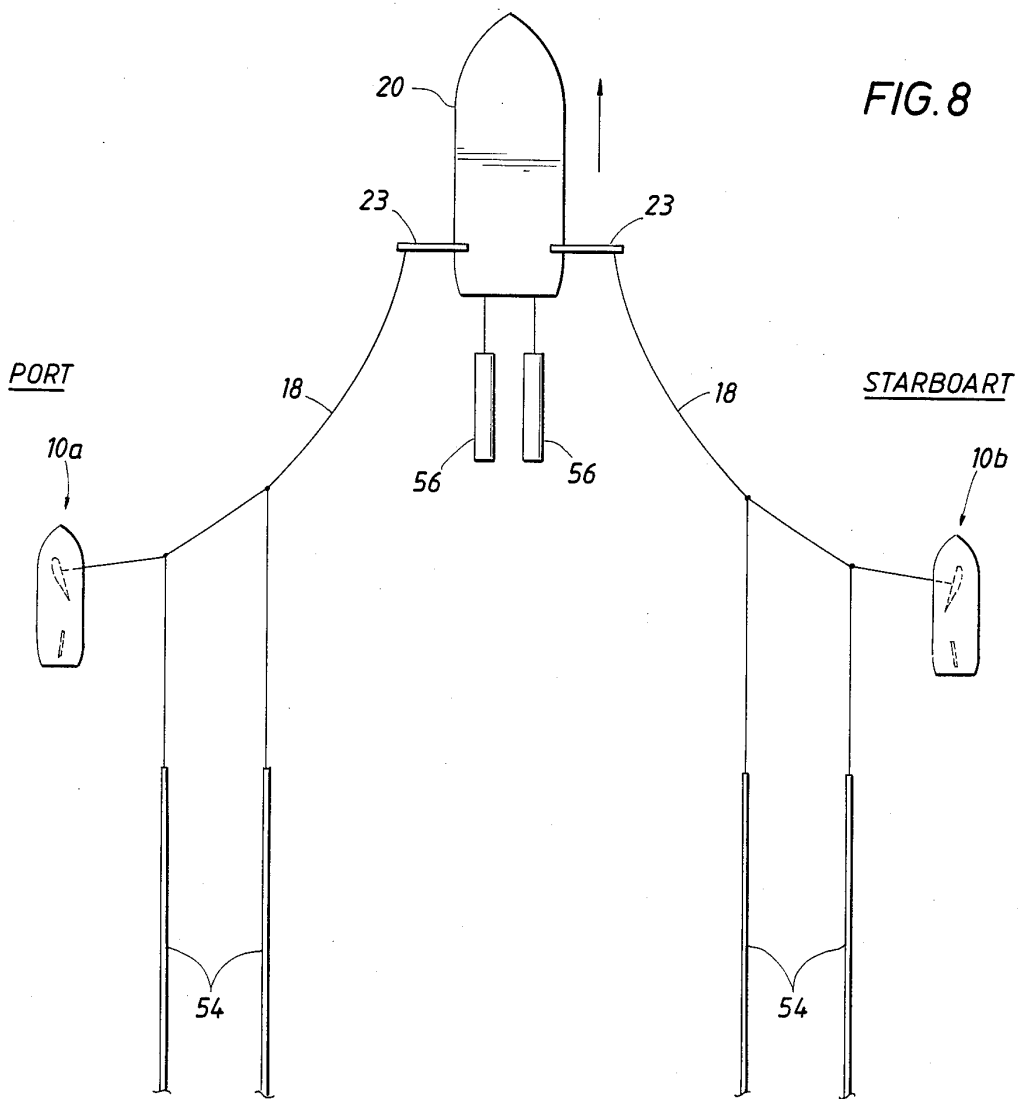


FIG. 8



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