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Frost et al.

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[54] **VARIABLE VALVE TIMING**

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§ 102(e) Date: **Jun. 5, 1996**

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[51] **Int. Cl.⁶** **F01L 13/00; F01L 1/344**

[52] **U.S. Cl.** **123/90.17; 123/90.31; 74/568 R; 251/251**

[58] **Field of Search** **123/90.15, 90.16, 123/90.17, 90.18, 90.31, 90.6; 74/567, 568 R; 251/251**

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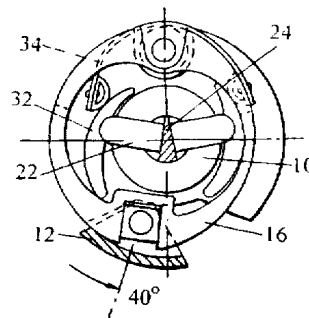
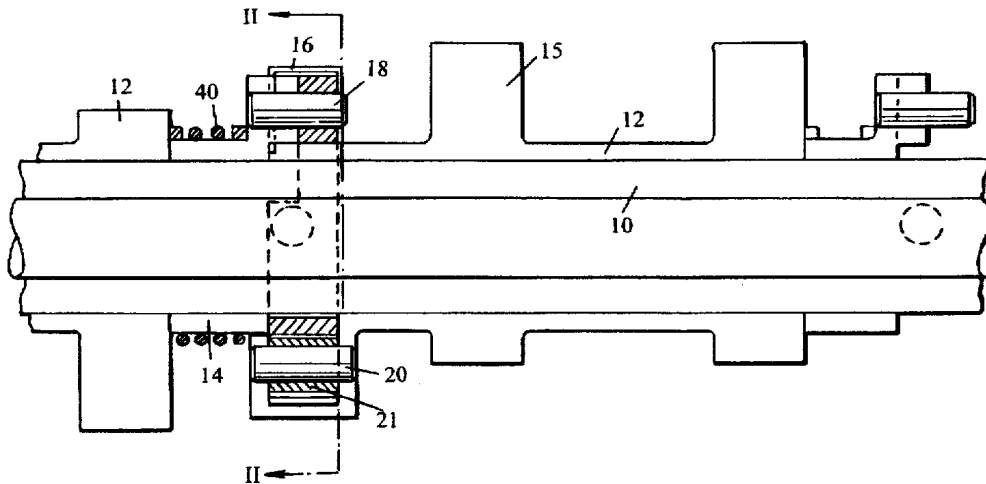
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[57] **ABSTRACT**

A valve operating mechanism comprises a hollow shaft (10), a sleeve journalled on the hollow shaft and having a cam, a coupling yoke (16) connected by a first pivot pin (18) to the hollow shaft (10) and by a second pivot pin (20) to the sleeve and means for pivoting the yoke (16) to effect a phase change between the hollow shaft (10) and the sleeve, wherein the means for pivoting the yoke (16) comprises an actuating rod (24) slidably received in the hollow shaft (10), a cam surface on the actuating rod (24) and a plunger (22) passing through a generally radial bore in the hollow shaft (10) to cause the yoke (16) to pivot in response to axial movement of the actuating rod (24).

9 Claims, 4 Drawing Sheets



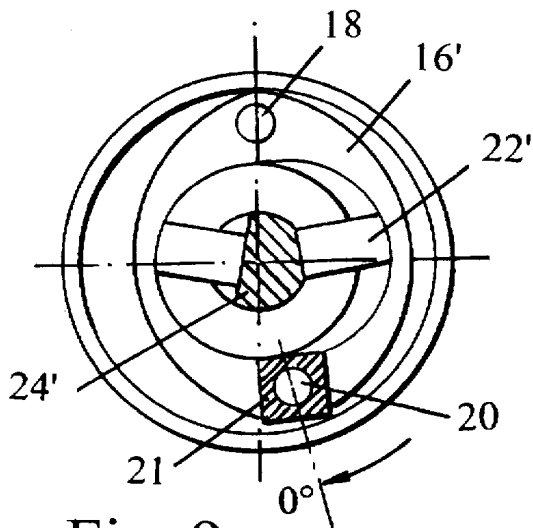


Fig. 9

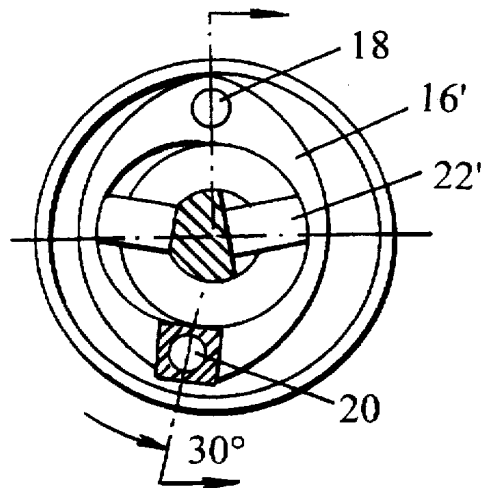


Fig. 10

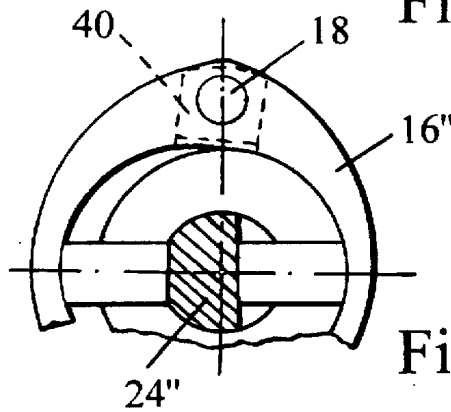


Fig. 13

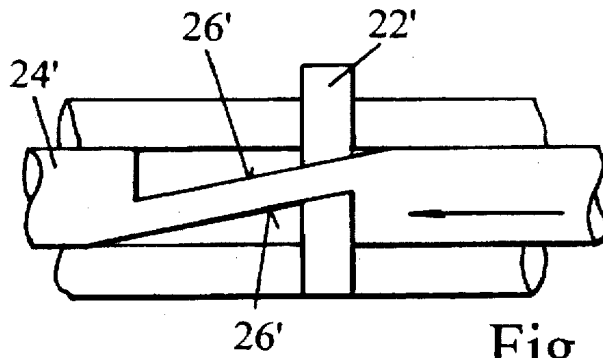


Fig. 11

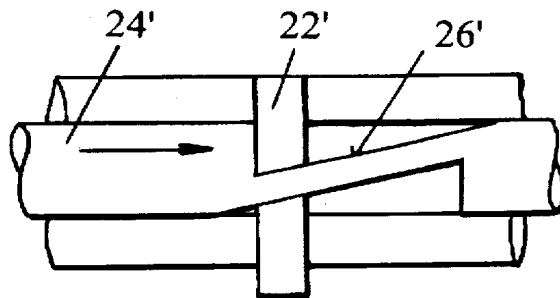


Fig. 12