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# United States Patent [19]

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Hollis

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[54] **HYDRAULICALLY OPERATED RESTRICTOR/SHUTOFF FLOW CONTROL VALVE**

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[21] Appl. No.: **306,281**

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[22] Filed: **Sep. 14, 1994**

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[51] Int. Cl.<sup>6</sup> ..... **F01P 7/14**

[52] U.S. Cl. .... **123/41.1; 137/605; 251/63.6**

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[58] Field of Search ..... 123/41.08, 41.09, 123/41.1, 41.15; 137/605; 251/63.6

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### [57] ABSTRACT

A valve apparatus for controlling fluid flow includes a valve housing, a piston member which reciprocates within the housing between a first position and a second position, and a biasing member. The piston member includes a piston shaft having a longitudinal axis. The piston shaft has a proximal portion which recesses into the valve housing when the piston member is in the first position and extends out of the valve housing when the piston member is in the second position. The proximal portion includes a plurality of cut-outs therethrough. The cut-outs allow a restricted flow of fluid to flow through the piston shaft in a direction perpendicular to the longitudinal axis of the shaft when the piston member is in the second position. The piston shaft also has a rear surface which receives pressure thereagainst for causing the piston member to extend out of the housing. The biasing member biases the piston member towards the first position as a result of a biasing force. The proximal portion of the piston shaft includes a proximal end which can accept a plug. The plug allows the valve apparatus to block fluid flow through one passageway, while the proximal portion of the piston shaft restricts fluid flow through a second passageway.

**11 Claims, 34 Drawing Sheets**

