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Labyrinth-Type Valve Seat Increases Valve Life by Decreasing Fluid Velocity
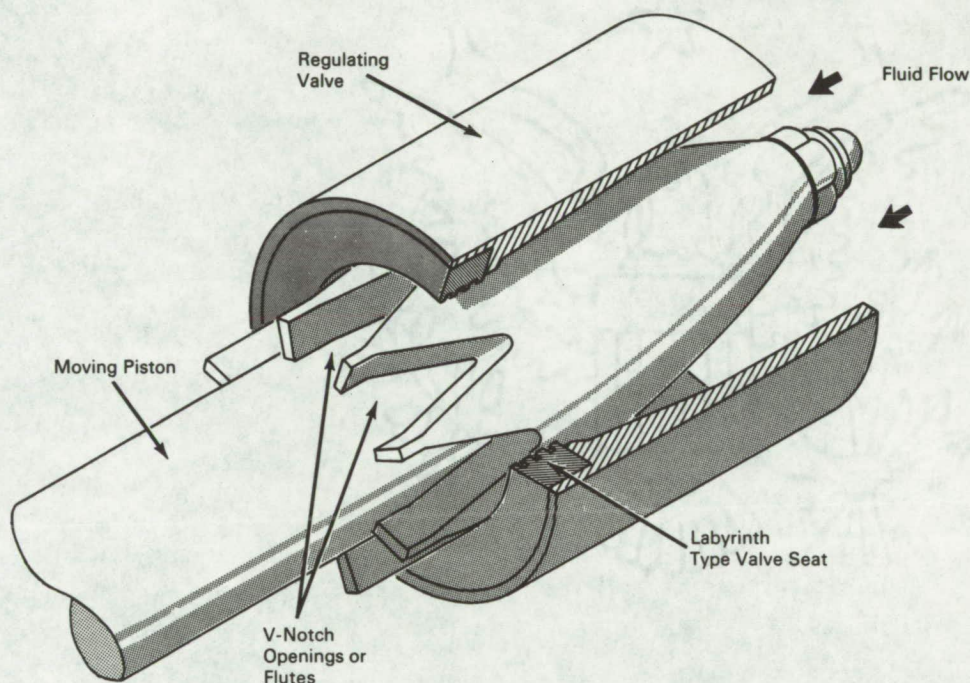
The problem:

To decrease the fluid velocity through regulator valve seats and seals in an effort to reduce erosion which causes valve failures.

The solution:

Reduce the fluid velocity by the use of (1) a labyrinth-type valve seat in the regulating valve and (2) a moving piston with V-notch openings.

How it's done:

The fluid flow is regulated by the position of the moving piston. When the V-notch openings on the piston are below the labyrinth-type seat there is no fluid flow. As the piston moves upward and the V-notches are directly in front of the labyrinth openings, fluid will begin to flow. The rate of flow is a function of the position of the V-notch. The flow will be least at the apex of the V-notch and greatest at the widest part. Controlling the rate of flow controls the erosion rate.

Note:

Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B66-10424

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: J. E. Hicks
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