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- (54) Title: METHOD AND APPARATUS FOR CONTROLLING FLUID FLOW IN AN AUTONOMOUS VALVE USING A STICKY SWITCH

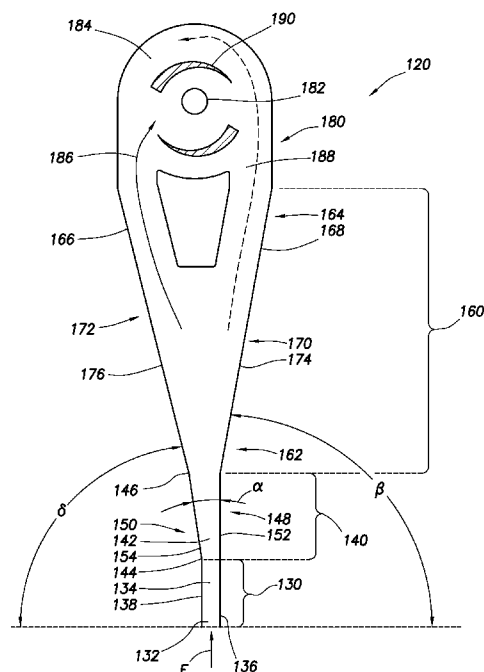


FIG.5

(57) Abstract: Apparatus and methods are described for autonomously controlling fluid flow in a tubular in a wellbore. A fluid is flowed through an inlet passageway into a biasing mechanism. A fluid flow distribution is established across the biasing mechanism. The fluid flow distribution is altered in response to a change in the fluid characteristic over time. In response, fluid flow through a downstream sticky switch assembly is altered, thereby altering fluid flow patterns in a downstream vortex assembly. The method "selects" based on a fluid characteristic, such as viscosity, density, velocity, flow rate, etc. The biasing mechanism can take various forms such as a widening passageway, contour elements along the biasing mechanism, or a curved section of the biasing mechanism passageway. The biasing mechanism can include hollows formed in the passageway wall, obstructions extending from the passageway wall, fluid diodes, Tesla fluid diodes, a chicane, or abrupt changes in passageway cross-section.

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