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(54) **MICROVALVE WITH PRESSURE EQUALIZATION**

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Related U.S. Application Data

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(52) **U.S. Cl.** **137/14**; 251/11; 251/129.06; 251/129.07; 251/368; 303/116.1; 303/119.2

(58) **Field of Search** 60/527, 528; 251/129.06, 251/129.07, 129.08, 368, 11, 281–283, 231, 301, 87, 88; 137/591.17, 596, 625.4, 625.42, 625.44, 625.45, 625.65, 505.18, 601.02, 14; 303/119.2, 119.3; 310/306, 307, 310

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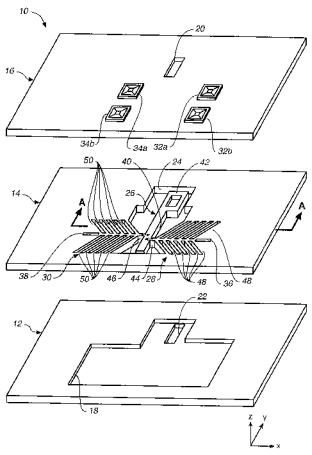
(57) **ABSTRACT**

Disclosed is a microvalve suitable for use in high pressure applications such as refriigeration. The microvalve has a displaceable member that slides across an inlet port, thereby creating an orifice. A pressure-equalizing contour is positioned beneath the displaceable member and is in fluid contact with the inlet port. The pressure on the displaceable member from the inlet port is equalized by the pressure from the pressure-equalizing contour. Consequently, the microvalve can be configured with its inlet port and outlet port on opposite sides of the microvalve. Pressures in the x and y direction are also equalized because of recesses that permit fluid from the inlet to contact all faces of the displaceable member.

35 Claims, 9 Drawing Sheets