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(54) Title: A DOWNHOLE BARRIER DEVICE HAVING A BARRIER HOUSING AND AN INTEGRALLY FORMED RUPTURE SECTION

(57) Abstract: A downhole barrier device comprising a housing having a design and a rupture layer formed with the housing and having another design. The housing and rupture layer are integrally formed using a laser melting process and have a density greater than 98 percent. The laser melting process is performed using a 3D printing process. The other design can be selected from a plurality of designs including at least two of: at least one fabricated stress concentration; at least one pattern of thickness less that of a thickness of the design; a sealing layer, a support layer, and a flow hole; and at least one shape selectable selected from a disc shape, a pinched shape, a folded shape, and a curved shape. The downhole barrier device can be formed using a metal selected from a plurality of metals and be selected based on operational use of the downhole barrier device.

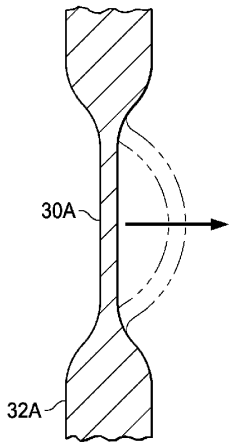


FIG. 2A

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