

(12) **United States Patent**  
**Scardino et al.**

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(54) **EVAPORATIVE EMISSION TREATMENT DEVICE**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 37 days.

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(51) **Int. Cl.<sup>7</sup>** ..... **B01D 53/04**; F02M 37/04

(52) **U.S. Cl.** ..... **96/147**; 55/502; 123/519

(58) **Field of Search** ..... 123/519; 96/147, 96/151; 55/385.3, 501, 502, 503, DIG. 19

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*Primary Examiner*—David A. Simmons

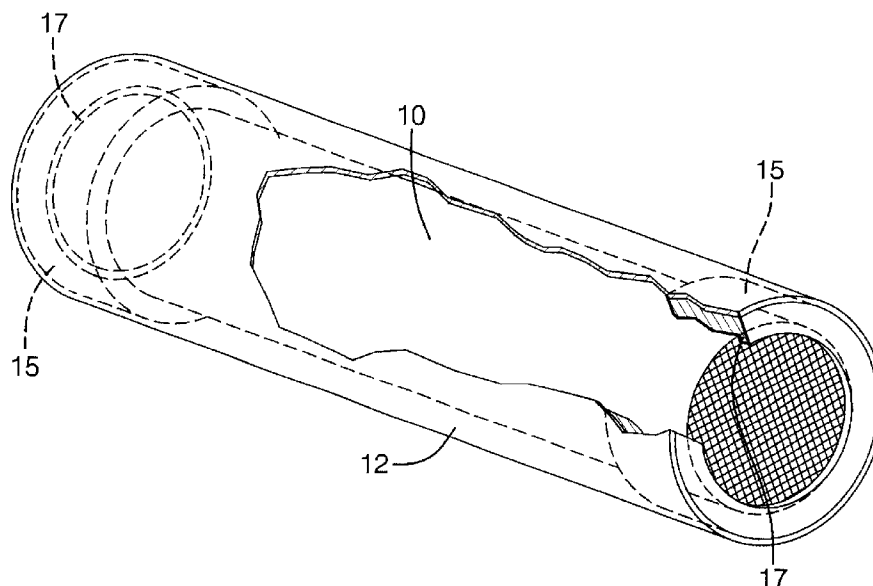
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(57) **ABSTRACT**

The evaporative emission treatment device comprises a monolith concentrically disposed within a shell, and having one or more sealing agents concentrically disposed about the monolith and in between the monolith and housing. The shell comprises a first shell portion having an inlet portion at one end and a connection element disposed at the opposing end, and a second shell portion having an outlet portion at one end and a connection element disposed at the opposing end. The shell can also include structural features to prevent fluid leakage, enhance fluid flow, enable attachment to other evaporative emission system components, enable mounting to a vehicle, and internally seal the monolith and sealing agents.

**25 Claims, 5 Drawing Sheets**



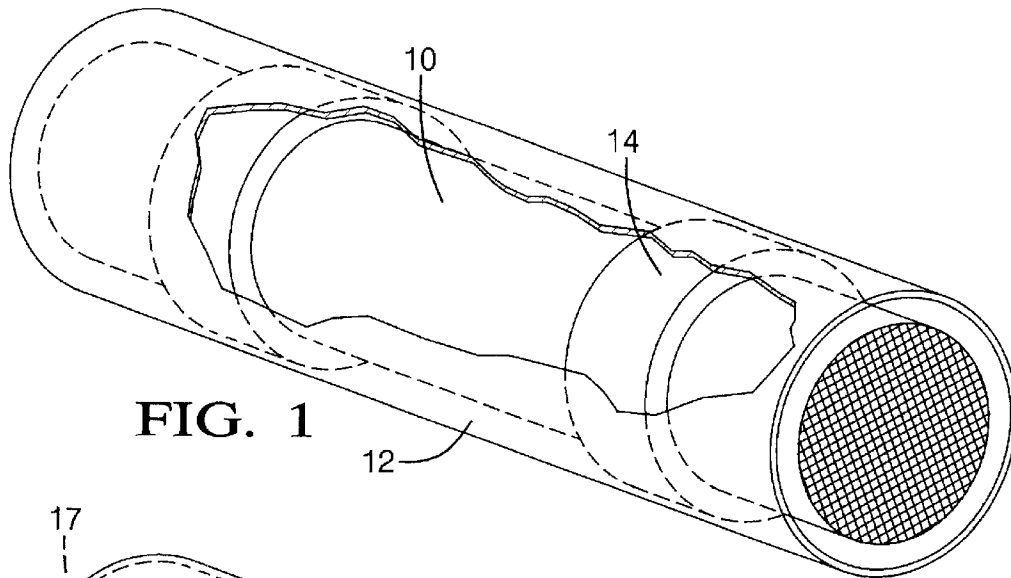


FIG. 1

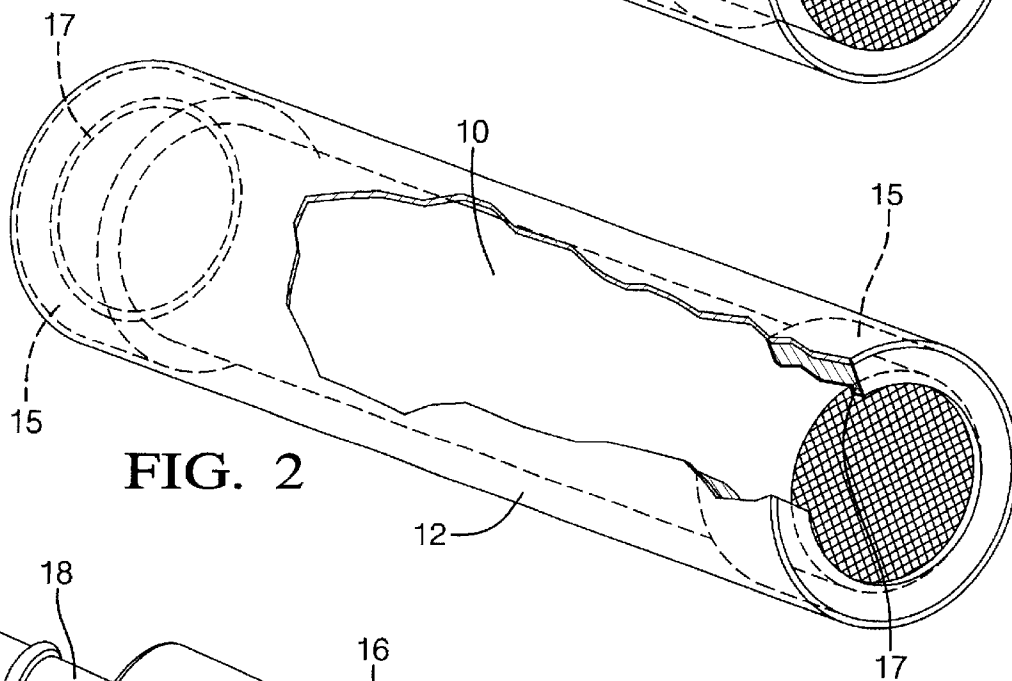


FIG. 2

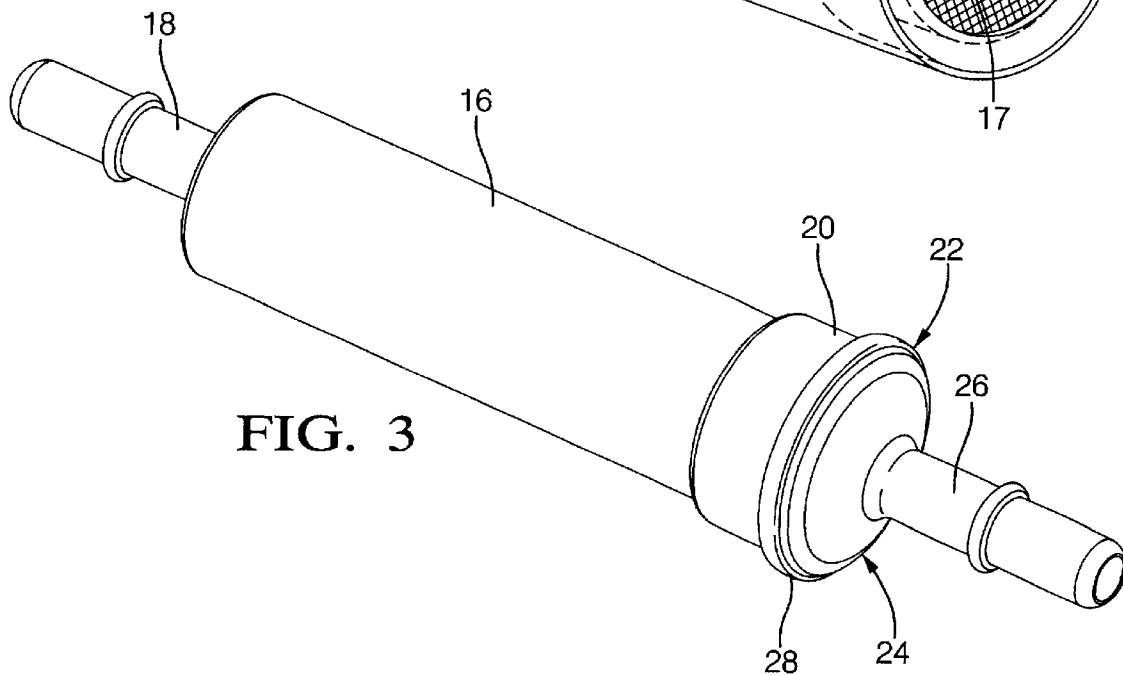


FIG. 3

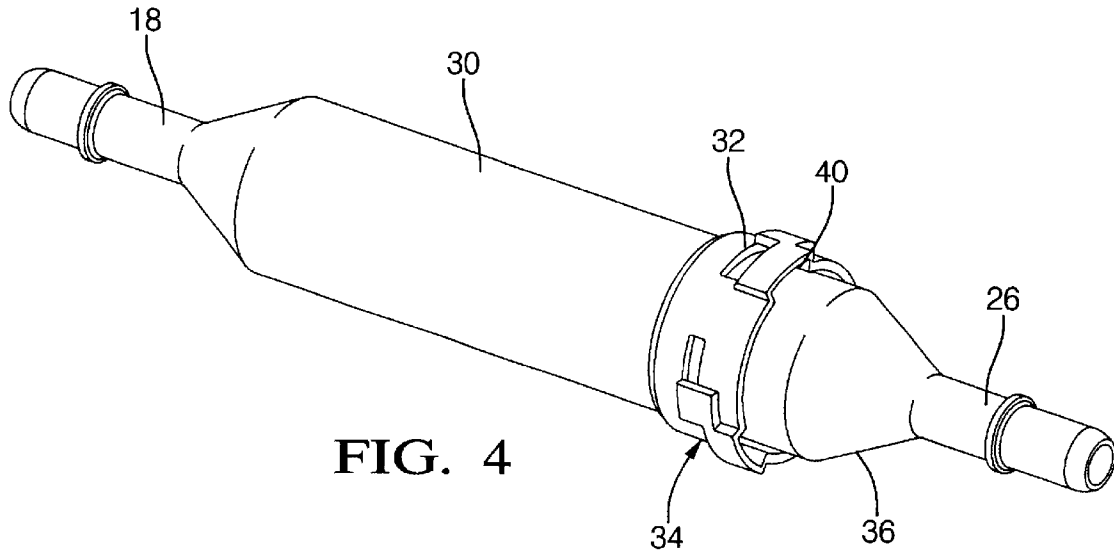


FIG. 4

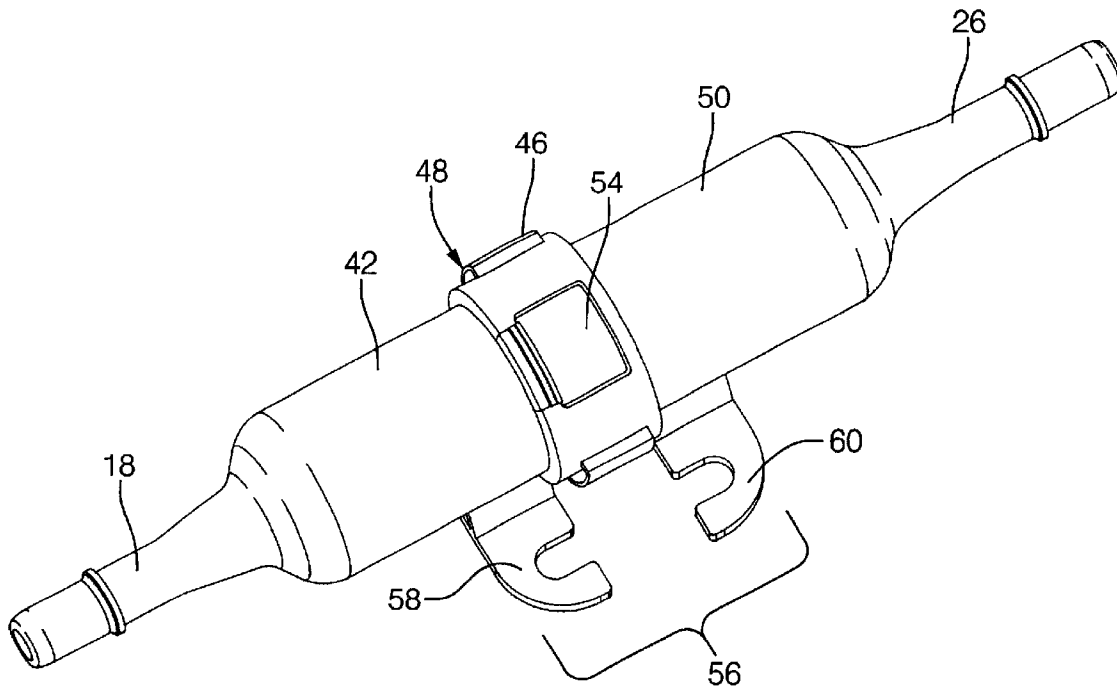


FIG. 5

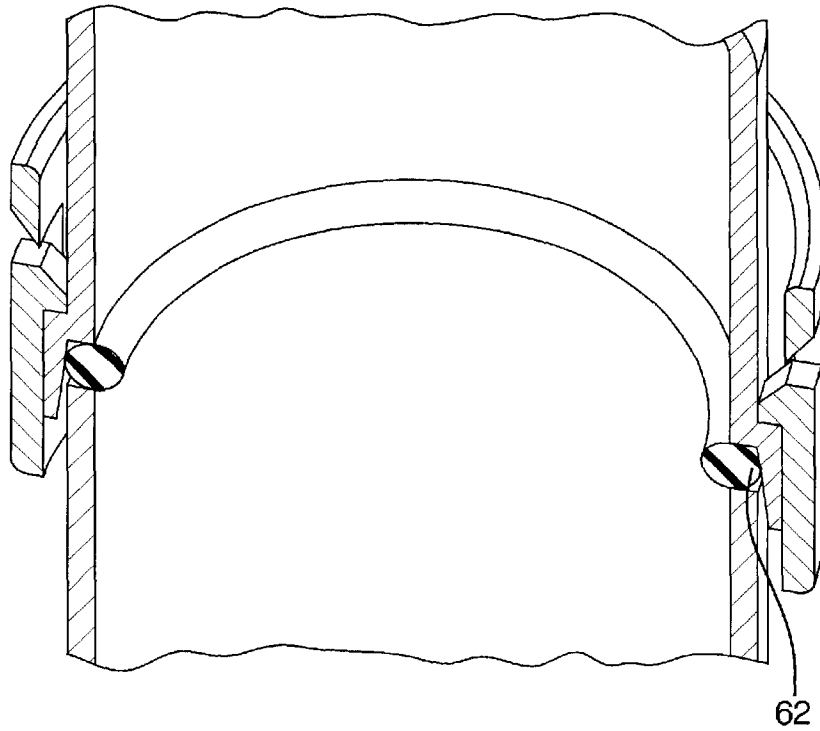


FIG. 6

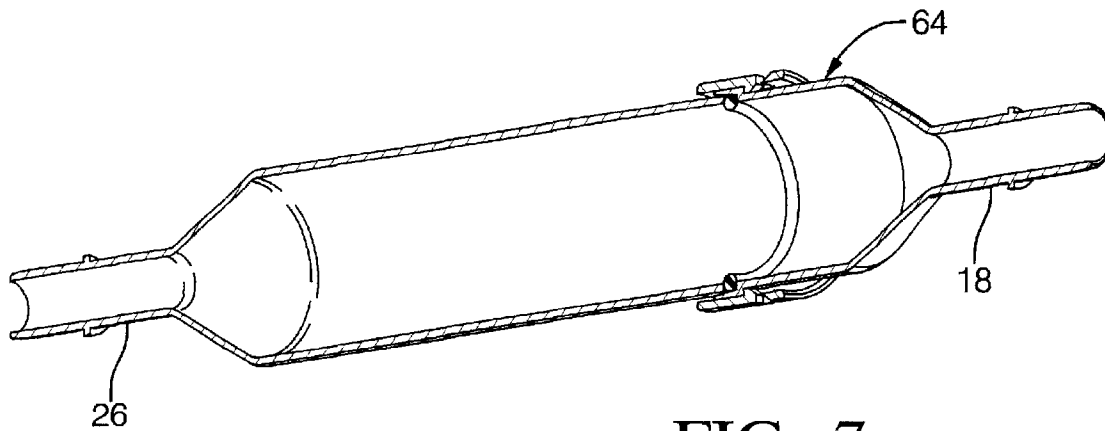


FIG. 7

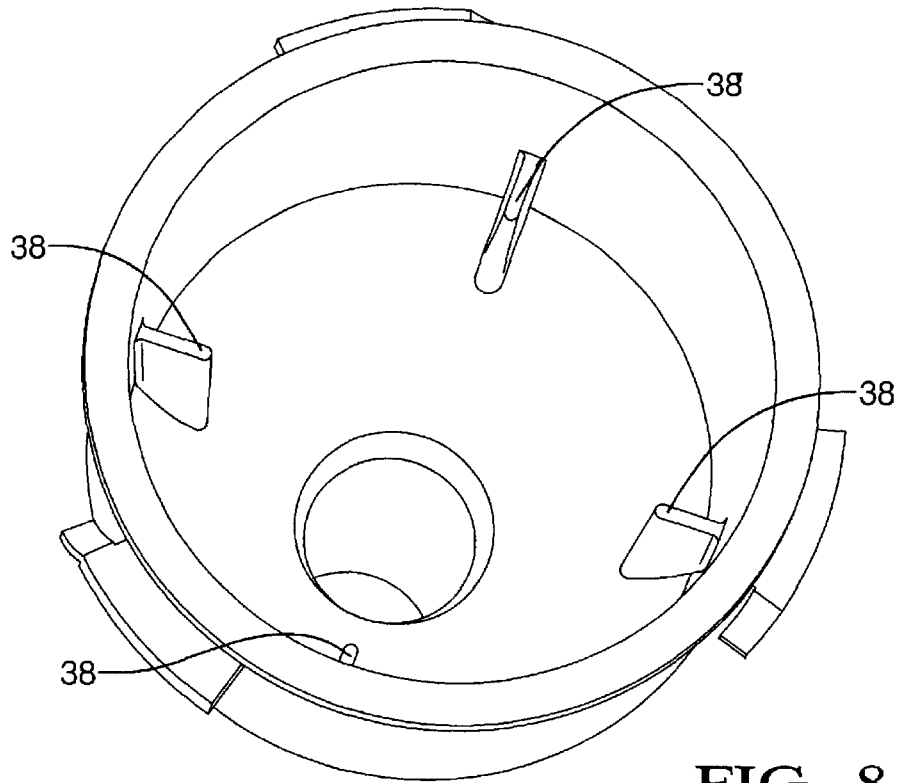


FIG. 8

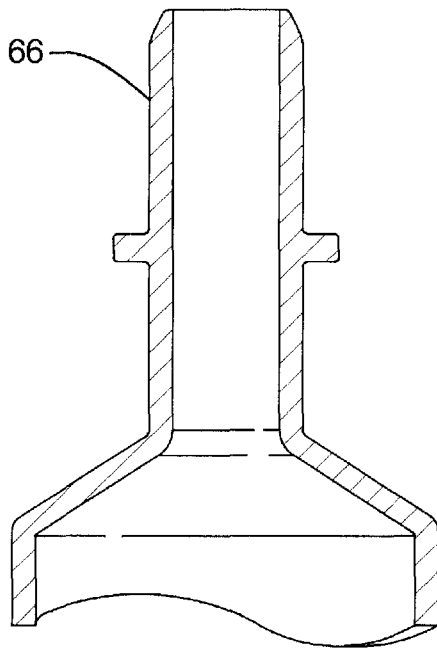


FIG. 9

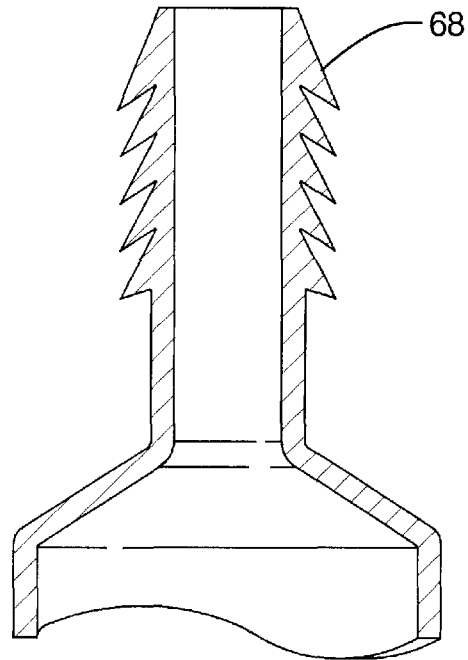


FIG. 10

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