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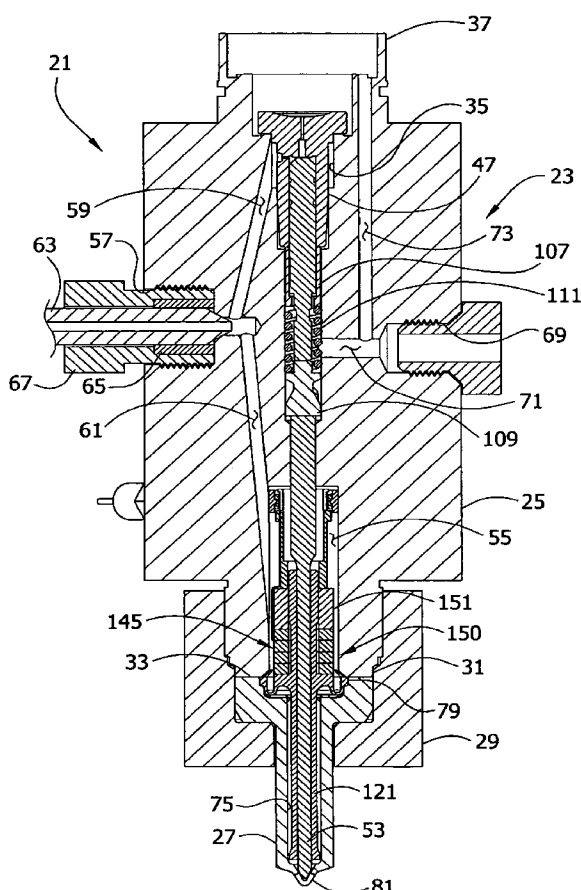
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(54) **Title:** ULTRASONIC FUEL INJECTOR



(57) **Abstract:** A fuel injector (21) for delivering fuel to an engine in which a housing (23) of the injector has an internal fuel chamber (55) and at least one exhaust port (83) in fluid communication with the fuel chamber. (55) A valve member (53) is moveable relative to the housing (23) between a closed position in which fuel within the fuel chamber (55) is inhibited against exhaustion from the housing, (23) and an open position in which fuel is exhaustable from the housing. An ultrasonic waveguide (121) is separate from the housing and valve member, (53) with substantially the entire ultrasonic waveguide (121) disposed within the fuel chamber to ultrasonically excite fuel within the fuel chamber prior to the fuel exiting through the at least one exhaust port (83) in the open position of the valve member. (53) An excitation device (145) is operable in the open position of the valve member (53) to ultrasonically excite the ultrasonic waveguide. (121)



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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**A. CLASSIFICATION OF SUBJECT MATTER**  
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**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
F02M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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A	US 5 330 100 A (MALINOWSKI IGOR [US]) 19 July 1994 (1994-07-19) abstract; figure 1	1,9,15, 20
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Information on patent family members

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