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(54) **Title:** AUTOMOTIVE GASOLINE SOLENOID DOUBLE POLE DIRECT INJECTOR

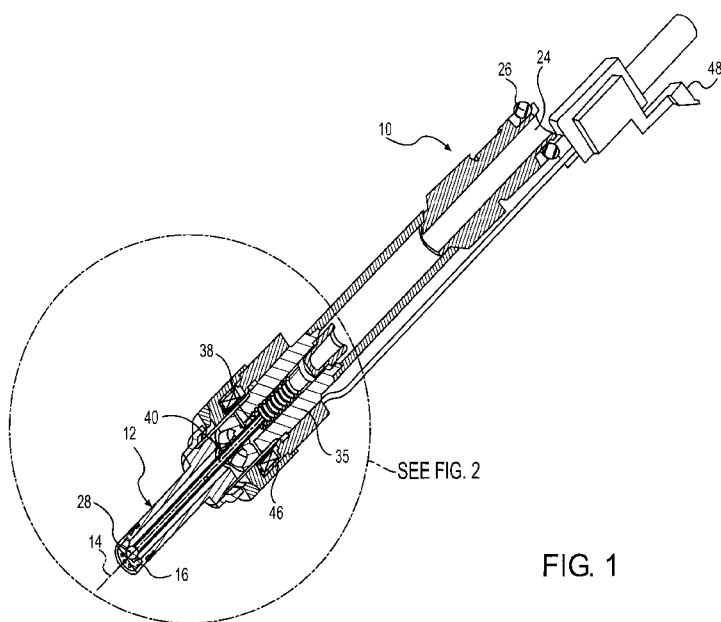


FIG. 1

(57) **Abstract:** A direct fuel injector (10) includes a body (12) having a passage between inlet and outlet ends. A seat (16) is at the outlet end and a closure member (28) is associated with the seat. A needle member (30) is associated with the closure member and is movable with respect to a pole piece (35) between a first, closed position and a second, open position. A spring (42) biases the needle member to the first position. An armature (32) is free-floating with respect to the needle member. An intermediate pole structure (38) is coupled with the needle member and is disposed between the pole piece and the armature and is decoupled therefrom. An armature stop (40) is coupled to the needle member and is spaced from the intermediate pole structure. An electromagnetic coil (46) is associated with the pole piece, intermediate pole structure and armature. The injector reduces bounce of the needle assembly.

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A. CLASSIFICATION OF SUBJECT MATTER  
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ADD.  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
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Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&amp;" document member of the same patent family</p>
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