

**ATTORNEY DOCKET NO.: 11381.110928**  
**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Daniel R. Cohn et al. Examiner: Not Yet Assigned  
Serial No.: Not Yet Assigned Art Unit: Not Yet Assigned  
Filing Date: Filed Herewith Confirmation No.: Not Yet Assigned  
Title: FUEL MANAGEMENT SYSTEM FOR VARIABLE ETHANOL OCTANE  
ENHANCEMENT OF GASOLINE ENGINES

**PRELIMINARY AMENDMENT**

*Via EFS-Web*  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**INTRODUCTORY COMMENTS**

Please preliminarily amend the application as follows:

Application No.: Filed Herewith  
Date: May 27, 2011

Docket No.: 11381.110928

**In the Specification**

Please amend paragraph [0001] on page 1 as follows:

This application is a continuation of United States Patent Application No. 12/815,842 filed June 15, 2010 which is a continuation of United States Patent Application No. 12/329,729 filed on December 8, 2008 which is a continuation of United States Patent Application No. 11/840,719 filed on August 17, 2007, which is a continuation of United States Patent Application No. 10/991,774, which is now issued as United States Patent No. 7,314,033.

**In the Claims**

1-56 (cancelled)

Please add the following new claims:

57. (new) A turbocharged or supercharged spark ignition engine which is fueled with gasoline and ethanol where ethanol is introduced into the engine in such a way that the vaporized cooling provided by the ethanol enhances the octane number more than it is enhanced by the intrinsic octane number of the ethanol.

58. (new) The turbocharged or supercharged spark engine of claim 57 where liquid ethanol is directly injected into the engine cylinders.

59. (new) The turbocharged or supercharged spark ignition engine of claim 58 where the ethanol is injected so as to have a greater concentration in the end gas region.

60. (new) The turbocharged or supercharged spark ignition engine of claim 59 where the ethanol has a higher concentration near the wall of the cylinder.

61. (new) The turbocharged or supercharged spark ignition engine of claim 60 further including swirl.

62. (new) The turbocharged or supercharged spark ignition engine of claim 59 where the knock resistance is increased relative to uniform distribution of ethanol in the cylinder.

63. (new) A turbocharged or supercharged spark ignition engine of claim 57 where the spark retard is changed to prevent knock from occurring when the ethanol energy fraction is reduced.

64. (new) A turbocharged or supercharged spark ignition engine where ethanol is introduced into the engine in such a way that it provides a 35 octane number increase over gasoline and the

octane number increase from vaporization cooling is greater than the octane number increase from the intrinsic octane of ethanol.

65. (new) The turbocharged or supercharged spark ignition engine of claim 64 where liquid ethanol is directly injected into the engine cylinders.

66. (new) The turbocharged or supercharged spark ignition engine of claim 64 where the ethanol is injected so to have a greater concentration in the end gas region.

67. (new) The turbocharged or supercharged spark ignition engine of claim 64 where the ethanol has a higher concentration near the wall of the cylinder.

68. (new) The turbocharged or supercharged spark ignition engine of claim 64 further including swirl.

69. (new) The turbocharged or supercharged spark ignition engine of claim 64 where the knock resistance is increased relative to uniform distribution of ethanol in the cylinder.

70. (new) A turbocharged or supercharged spark ignition engine of claim 64 where the spark retard is changed to prevent knock from occurring when the ethanol energy fraction is reduced.

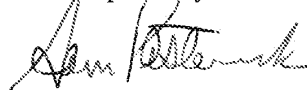
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**Remarks**

Claims 1-56 have been cancelled. New claims 57-70 are being added. No new matter is being introduced.

Respectfully Submitted,



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