

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-207
Relating to Exemptions Under Section 27156
of the Vehicle Code

ENVIRONMENTAL PRODUCTS, INC.
"TURBO MASTER" DEVICE

Pursuant to the authority vested in the Air Resources Board (ARB) by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the "Turbo Master" manufactured by Environmental Products, Inc., of 7293 S. Sherman Street, Littleton, Colorado 80122, has been found not to reduce the effectiveness of required motor vehicle pollution control devices and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1990 and older carbureted non-turbocharged and non-supercharged gasoline vehicles.

This Executive Order is valid provided that installation instructions for this device will not recommend tuning the vehicle to specifications different from those submitted by the device manufacturer.

Changes made to the design or operating conditions of the device, as exempt by the ARB, that adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this device using an identification other than that shown in this Executive Order or marketing of this device for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the ARB. Exemption of a kit shall not be construed as an exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order does not constitute any opinion as to the effect that the use of this device may have on any warranty either expressed or implied by the vehicle manufacturer.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE "TURBO MASTER" DEVICE.

No claim of any kind, such as "Approved by Air Resources Board", may be made with respect to the action taken herein in any advertising or other oral or written communication.

Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

Section 43644 of the Health and Safety Code provides as follows:

"43644. (a) No person shall install, sell, offer for sale, or advertise or, except in an application to the state board for certification of a device, represent, any device as a motor vehicle pollution control device for use on any used motor vehicle unless that device has been certified by the state board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as a certified device which, in fact, is not a certified device. Any violation of this subdivision is a misdemeanor.

Any apparent violation of the conditions of this Executive Order will be submitted to the Attorney General of California for such action as he deems advisable.

Executed at El Monte, California, this 18th day of September, 1990.



R.B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF ENVIRONMENTAL PRODUCTS, INC. "TURBO MASTER" DEVICE
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156
AND TITLE 13, CALIFORNIA CODE OF REGULATIONS, SECTION 2222

September, 1990

EVALUATION OF ENVIRONMENTAL PRODUCTS, INC. "TURBO MASTER" DEVICE
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156
AND TITLE 13, CALIFORNIA CODE OF REGULATIONS, SECTION 2222

by

Mobile Source Division

State of California
AIR RESOURCES BOARD
9528 Telstar Avenue
El Monte, CA 91731

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

Environmental Products, Inc. (Environmental) of 7293 S. Sherman Street, Littleton, Colorado 80122, has applied for an exemption for their "Turbo Master" device for 1990 and older model-year carbureted non-turbocharged and non-supercharged gasoline vehicles. The Turbo Master is an air bleed device which feeds secondary air into the inlet manifold through the P.C.V. line. The Turbo Master air feed system is activated by the negative pressure generated by the vehicle engine revolution. The Turbo Master design also incorporates altitude correction controller which increases the secondary air feed at high altitude and automatically lowers it at lower altitude.

Emissions test data submitted from an independent laboratory and Air Resources Board's (ARB's) confirmatory tests show that the Turbo Master device does not reduce the effectiveness of the emission control system of the vehicle in which it is installed. The device is sealed after installation by trained installer to prevent tampering. Based on the above, the staff recommends that the exemption be granted as requested.

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AND TITLE 13, CALIFORNIA CODE OF REGULATIONS, SECTION 2222

I. INTRODUCTION

Environmental Products, Inc. (Environmental) of 7293 S. Sherman Street, Littleton, Colorado 80122, has applied for an exemption for their Turbo Master device for 1990 and older model year carbureted non-turbocharged and non-supercharged gasoline vehicles. The Turbo Master is an air bleed device which feeds secondary air into the inlet manifold through the P.C.V. line. The Turbo Master air feed system is activated by the negative pressure generated by the vehicle engine revolution. The Turbo Master design also incorporates altitude correction controller which automatically increases the secondary air feed at high altitude and reduces it at lower altitude. The use of the Turbo Master does not require the removal of any emission control device of the vehicle on which it is installed.

II. CONCLUSION

The applicant has submitted all the required CVS-75 test data from an independent laboratory. Based on the submitted exhaust emissions test data and the results of ARB's confirmatory tests, the staff concludes that the Environmental's Turbo Master device does not reduce the effectiveness of the emission control system of the vehicle on which it is installed.

III. RECOMMENDATION

The staff recommends that the exemption be granted as requested and that Executive Order No. D-207 be issued, permitting the advertisement, sale and installation of the Turbo Master device on 1990 and older model-year carbureted non-turbocharged and non-supercharged gasoline vehicles.

IV. DEVICE DESCRIPTION

The Environmental "Turbo Master" is an air bleed device with a diaphragm type barometric altitude correction controller. According to the manufacturer, the altitude correction controller will automatically adjust the air flow depending on the altitude. The "Turbo Master" manufacturer also claims that the device will help immediate engine start, increase power, lower fuel cost, and clean the engine with usage.

The device is connected to the engine air feed system through the P.C.V. (see Appendix A-2). The connection from the device to the P.C.V. line is made with a three-way tee. The P.C.V. line feeds into the engine intake manifold. The device is also connected to the vacuum advance line to the distributor and to the EGR by means of two three-way tees. The Turbo Master device has three adjustments, one for CO at low RPM, one for HC at low RPM and one for HC at high RPM. An air cleaner covers the 0.312 inch orifice through which air enters the device. The device is firmly mounted on the inside wall of the vehicle near the front shock hump with the brackets provided, and does not interfere with other engine parts. It is mounted as close as possible to the P.C.V. line. It is to be installed and adjusted only by trained installer according to the manufacturer's installation instructions. The device is sealed after installation to prevent tampering.

At low RPM, air flow is controlled by the idle speed metering rod which is attached to the altitude controller, and also by the HC idle adjustment screw. At high RPM, the carburetor vacuum pulls down a compression spring controlled diaphragm which is located at the lower part of the device and causes more air to flow through both the low and high speed metering rods, and the low and high speed adjustment screw openings. Air flows into the engine inlet manifold through the P.C.V. line.

V. DEVICE EVALUATION

Two vehicles were used to evaluate the Turbo Master device, a 1989 Ford Festiva with 1.3L engine and a 1990 Buick Estate Wagon with 5.0L engine. One back-to-back CVS-75 test and HFET were conducted. The device was installed and set by the manufacturer in accordance with their installation instructions. The tests were performed at Milton Roy Company laboratory (formerly ACS) in Orange, California. Confirmatory tests were performed by the ARB at the Haagen-Smit Laboratory in El Monte, California. The confirmatory tests consisted of two back-to-back CVS-75 and HFET. Results from the tests are shown in the appendix.

The tests showed consistent reduction in CO for both vehicles. The change in HC showed an overall reduction for both vehicles. The change in NOx is inconsistent but did not show significant increase or decrease. There was no significant fuel economy benefit for the Festiva, however, there was a fuel economy gain of 8.2% for the Buick Estate Wagon.

APPENDIX

Environmental "Turbo Master" Device
Exhaust Emission Test Results
On a 1989 Ford Festiva 1.3L
Milton Roy Company

<u>Test Mode</u>	<u>Exhaust Emissions (gm/mi)</u>			<u>Fuel Economy (mpg)</u>
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>City</u>
Baseline	0.084	0.816	0.904	38.06
Device	0.081	0.675	0.916	37.92
% Change	-3.6	-17.3	+1.3	-0.4

Environmental "Turbo Master" Device
Exhaust Emission Test Results
On a 1990 Buick Estate Wagon 5.0L
Milton Roy Company

<u>Test Mode</u>	<u>Exhaust Emissions (gm/mi)</u>			<u>Fuel Economy (mpg)</u>
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>City</u>
Baseline	0.204	1.175	0.591	16.04
Device	0.213	1.148	0.629	15.94
% Change	+4.4	-2.3	+6.4	-0.6

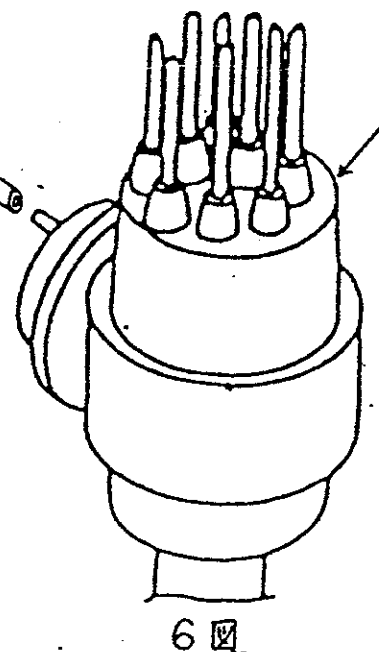
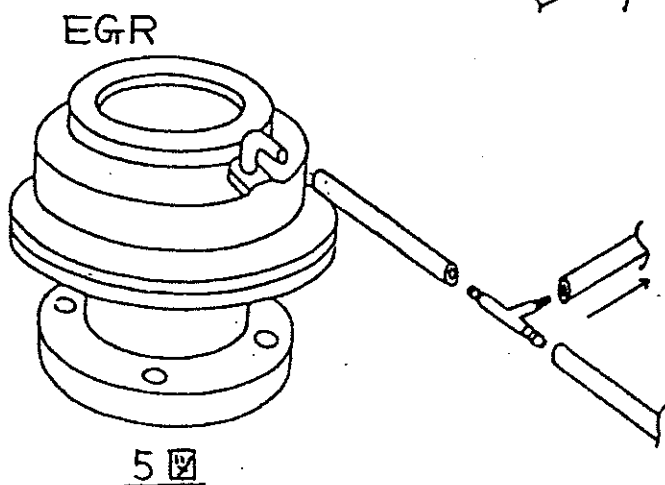
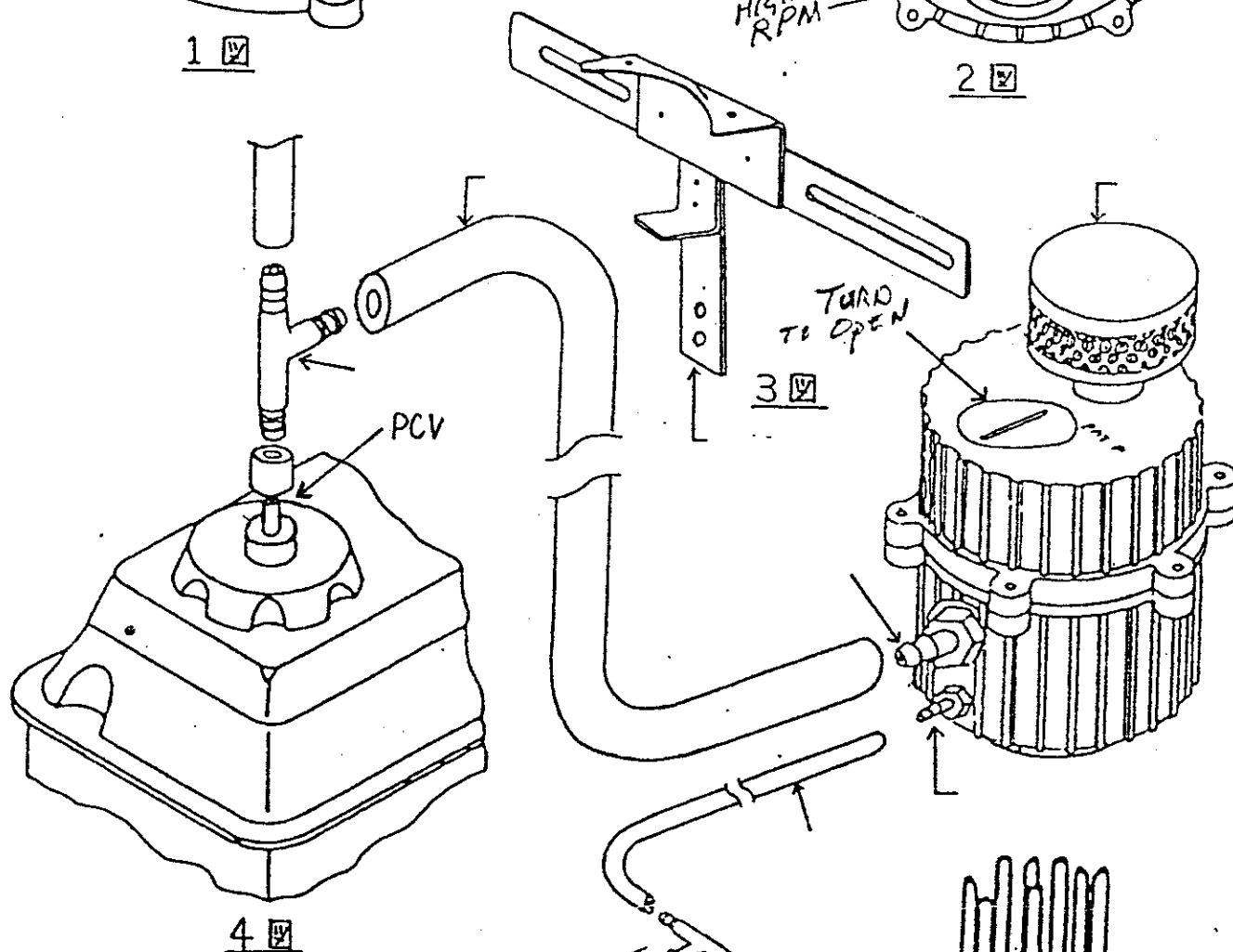
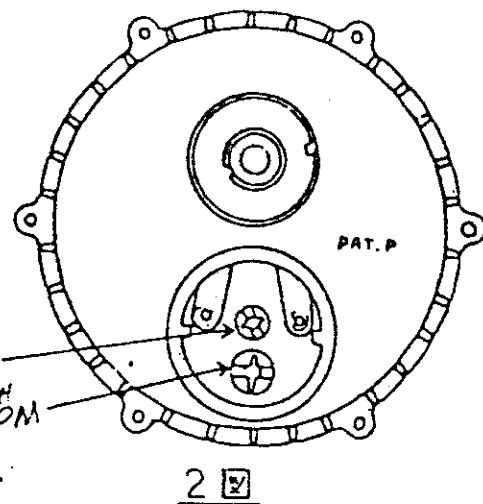
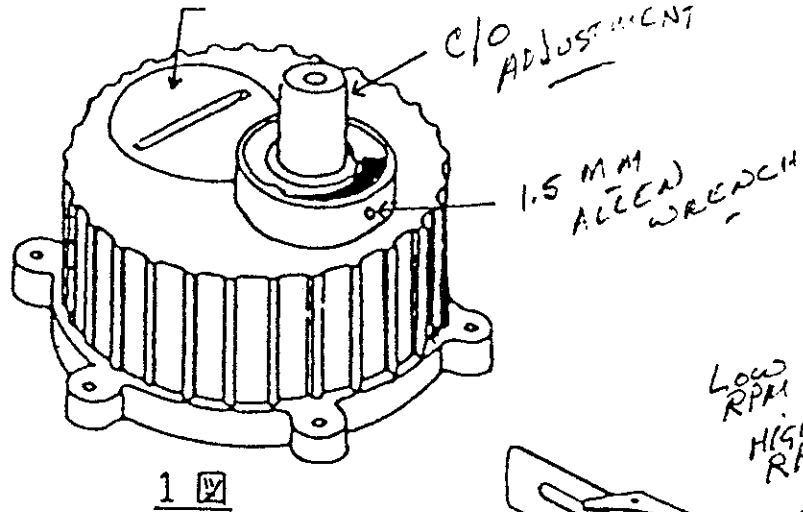
Environmental "Turbo Master" Device
Exhaust Eission Test Results
On a 1989 Ford Festiva 1.3L
Air Resources Board

<u>Test Mode</u>	<u>Exhaust Emissions (gm/mi)</u>			<u>Fuel Economy (mpg)</u>
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>City</u>
Baseline	0.142	1.574	0.554	36.53
Baseline	0.104	1.335	0.595	36.48
Average	0.123	1.455	0.575	36.51
Device	0.091	0.949	0.696	37.08
Device	0.093	0.894	0.664	36.96
Average	0.092	0.922	0.680	37.02
% Change	-25.2	-36.6	+18.3(0.105gm) ¹	+1.4

Environmental "Turbo Master" Device
Exhaust Emission Test Results
On a 1990 Buick Estate Wagon 5.0L
Air Resources Board

<u>Test Mode</u>	<u>Exhaust Emissions (gm/mi)</u>			<u>Fuel Economy (mpg)</u>
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>City</u>
Baseline	0.214	1.598	0.620	15.37
Baseline	0.308	3.562	0.620	15.05
Average	0.261	2.580	0.620	15.21
Device	0.223	1.640	0.571	17.28
Device	0.249	1.953	0.616	15.62
Average	0.236	1.796	0.593	16.45
% Change	-9.6	-30.4	-4.4	+8.2

1. Under the amended Vehicle Code Section 27156 Exemption Criteria an increase of 0.1gm is allowable. The NOx increase of 0.105gm for the Ford Festiva is considered to be within test variability.



[54] **METHOD AND APPARATUS FOR PRODUCING AND SUPPLYING ATOMIZED FUEL TO AN INTERNAL COMBUSTION ENGINE**

[76] Inventor: Carl L. Urich, 7293 S. Sherman St., Littleton, Colo. 80122

[21] Appl. No.: 145,605

[22] Filed: May 1, 1980

[51] Int. Cl.³ F02M 21/02; F02M 17/26

[52] U.S. Cl. 123/525; 123/536; 123/575; 123/518

[58] Field of Search 123/525, 536, 538, 575, 123/577, 518

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,150,764 3/1939 Farineau 123/575
2,315,881 4/1943 Thomas 123/575

2,796,852 6/1957 Schumacher 123/575

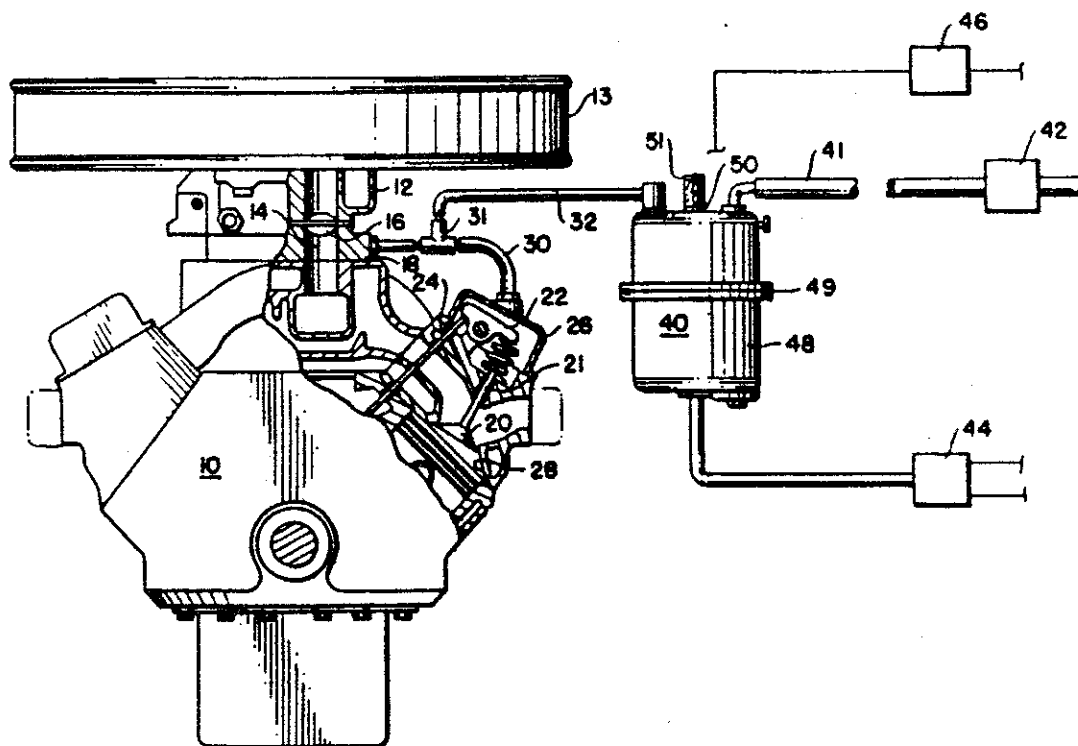
Primary Examiner—Wendell E. Burns

[57]

ABSTRACT

A method and apparatus for efficiently atomizing fuel for supplemental supply to an internal combustion engine are described wherein the atomized fuel is supplied to the engine in addition to the conventionally carburetted fuel. A portion of the fuel being supplied to a carburetor in a conventional manner is diverted to the system according to the invention and is supplied thereto in a metered fashion. A fuel vapor is produced and is supplied to the engine downstream of the carburetor, as required by the engine; this requirement being indicated by engine vacuum. Vaporization is accomplished in the described embodiment by heat and ultrasonic nebulization.

14 Claims, 7 Drawing Figures



[54] **METHOD AND APPARATUS FOR PRODUCING AND SUPPLYING ATOMIZED FUEL TO AN INTERNAL COMBUSTION ENGINE**

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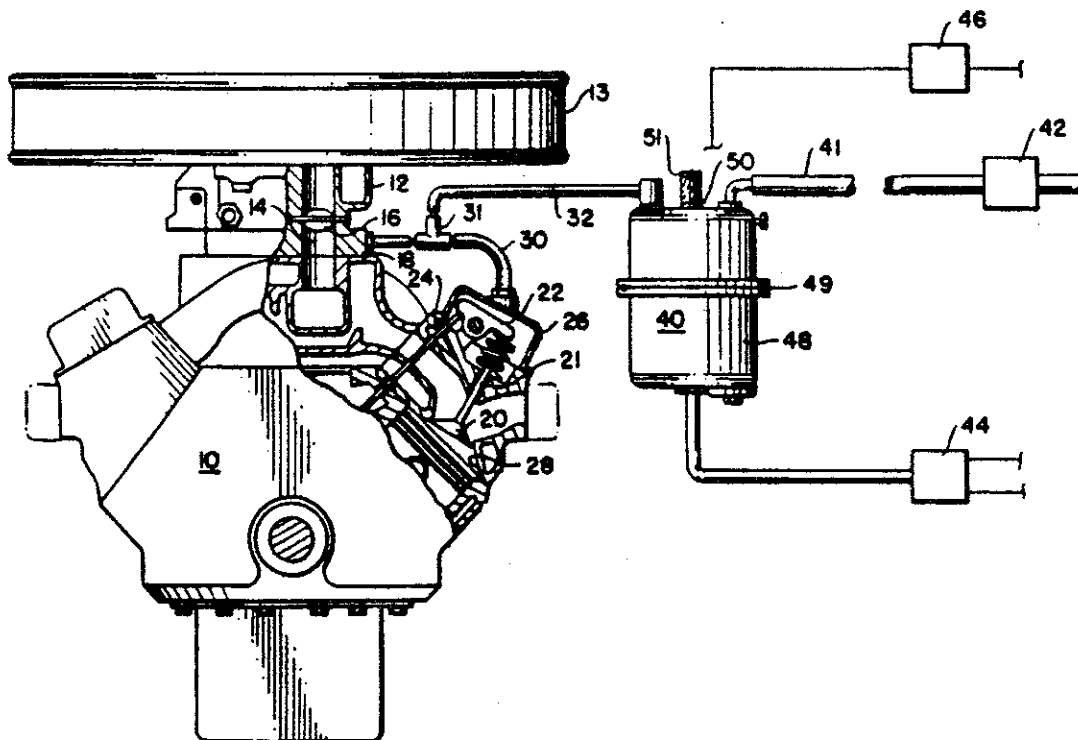
2,796,852 6/1957 Schumacher 123/575

Primary Examiner—Wendell E. Burns

ABSTRACT - B, Pollution Device.

A method by which this apparatus controls the the fuel air ratio. The fuel is turned off at device. The electronics are also turned off in the device. Thus, using the air controls and presetting the air and fuel ratios, the unit becomes a Pollution device.

14 Claims, 7 Drawing Figures



[54] **METHOD AND APPARATUS FOR PRODUCING AND SUPPLYING ATOMIZED FUEL TO AN INTERNAL COMBUSTION ENGINE**

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[58] Field of Search 123/525, 536, 538, 575, 123/577, 518

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2,796,852 6/1957 Schumacher 123/575

Primary Examiner—Wendell E. Burns

[37]

ABSTRACT—A, Gas Saver.

A method and apparatus for efficiently atomizing fuel for supplemental supply to an internal combustion engine are described wherein the atomized fuel is supplied to the engine in addition to the conventionally carburetted fuel. A portion of the fuel being supplied to a carburetor in a conventional manner is diverted to the system according to the invention and is supplied thereto in a metered fashion. A fuel vapor is produced and is supplied to the engine downstream of the carburetor, as required by the engine; this requirement being indicated by engine vacuum. Vaporization is accomplished in the described embodiment by heat and ultrasonic nebulization.

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