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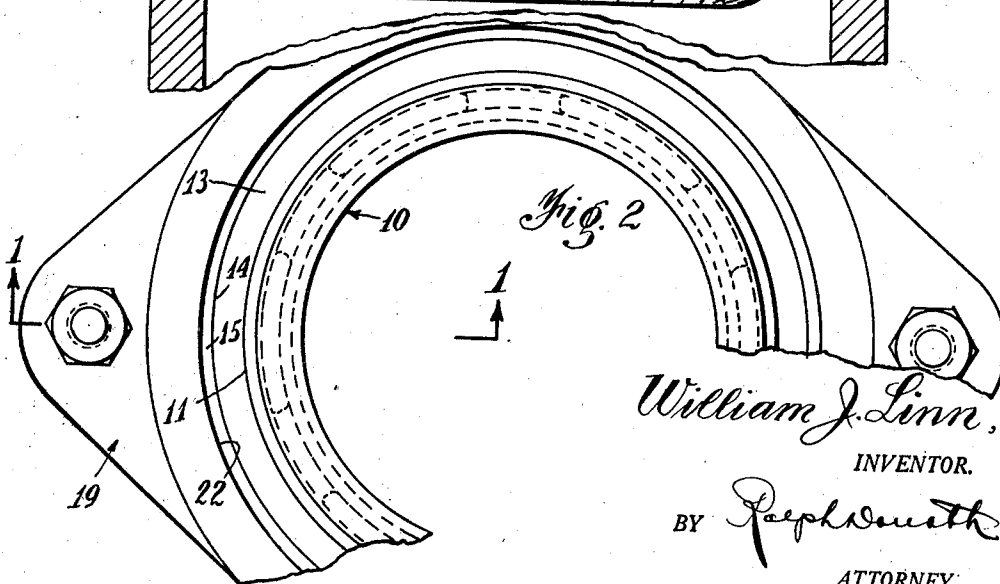
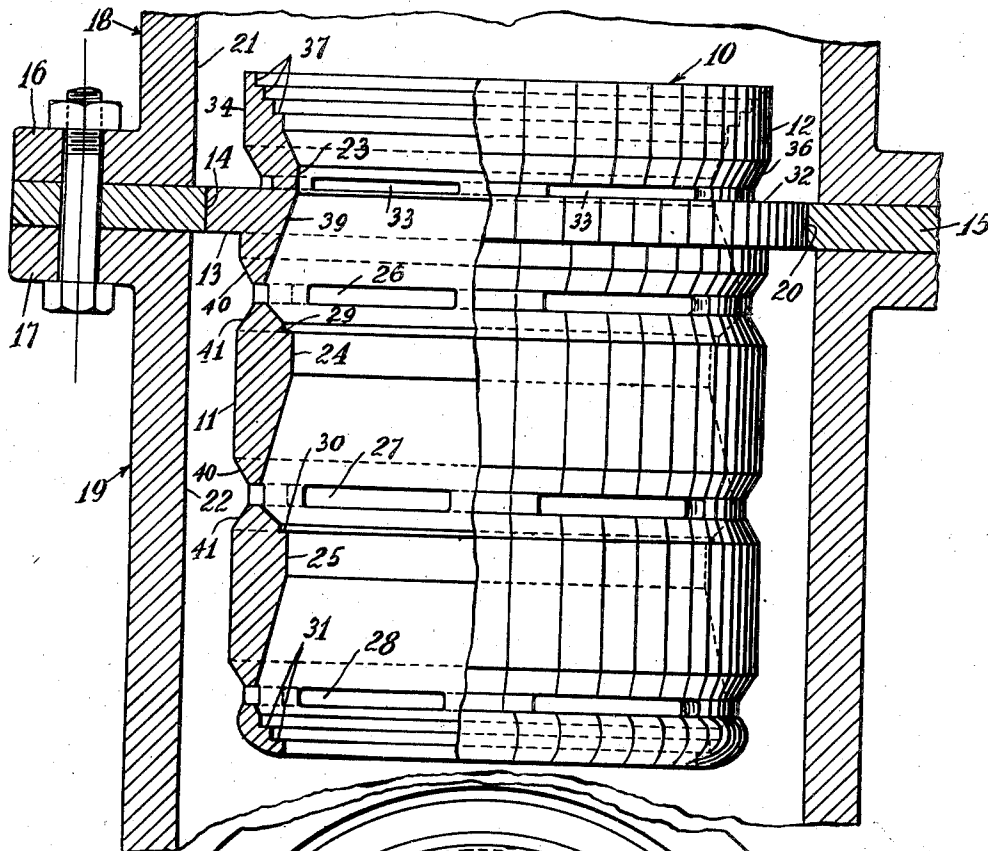
W. J. LINN

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FUEL ATOMIZER OF THE VENTURI TYPE

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Fig. 1



William J. Linn,
INVENTOR.

BY *Joseph Smith*
ATTORNEY.

UNITED STATES PATENT OFFICE

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FUEL ATOMIZER OF THE VENTURI TYPE

William J. Linn, Pittsburgh, Pa.

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2 Claims. (Cl. 48—180)

The present invention relates to venturis and more particularly to venturis of the type which are introduced into the fuel supply line between the carburator and the engine intake manifold or, if so desired, the venturi may be part of the carburator.

One of the objects of the invention is to increase the power of an internal combustion engine and reduce the quantity of gasoline used in an automobile per mile.

Another object of the invention is to provide an internal combustion engine which will nearly eliminate carbon accumulation within the cylinders and around the spark-plugs due to the more rarified condition of the fuel mixture produced when using my novel fuel atomizer and vaporizer of the Venturi type.

Still another object of the invention is to provide an internal combustion engine with a novel venturi which will permit the use of low grade gasoline.

Yet another object of the invention is to provide an internal combustion engine with an attachment which is introduced between the carburator and the intake manifold which is adapted to atomize and vaporize the fuel mixture in such a way, that every part of the air receives its share of gasoline thereby eliminating forming of drops of the fuel to enter the cylinders of the engine.

Still another object of the invention is to provide a fuel atomizer of the Venturi type which has a series of aligned venturis, each of which having a restricted passage or throat of maximum dimension so as not to cause an undesirable reduction of the opening at the outlet end of the carburator and the intake end of the manifold.

A still further object of the invention is to provide a fuel atomizer and vaporizer of the Venturi type which is provided with a series of venturis, each of which having individual mixture deflectors and individual expansion ports.

Still another object of the present invention is to provide a fuel atomizer and vaporizer attachment for internal combustion engines which will thoroughly nebulize the fuel mixture at idling speed as well as at high speed of the engine.

Another object of the invention is to provide a fuel atomizer and vaporizer attachment which is adapted to be placed intermediate the carburator and the intake manifold of the engine without altering the carburator or the intake manifold.

A still further object of the invention is to provide a fuel atomizer which may be part of

the carburator instead of an attachment placed between the carburator and the intake manifold.

Further objects of the invention are to provide a fuel atomizer and vaporizer which is very simple in its construction and arrangements, durable and extremely efficient in its use, readily installed and inexpensive to manufacture.

To the accomplishment of these and such other objects as may hereafter appear the invention consists of the novel construction, combination and arrangement of parts herein specifically described and illustrated in the accompanying drawing, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which come within the scope of the claims hereunto appended.

In the drawing, wherein like numerals of reference designate corresponding parts throughout the several views,

Figure 1 is an enlarged, fragmentary vertical sectional view along line I—I in Figure 2 through a venturi comprising my invention and secured intermediate a carburator and an intake manifold, part of the venturi being shown in outline. Figure 2 is a fragmentary bottom view of Figure 1.

Referring now to the drawing by reference characters, the numeral 10 designates, in general, the novel fuel atomizer and vaporizer of the Venturi type as used in this invention and the same comprises a cylindrical shell 11, provided, in close proximity of the top portion thereof, with an exterior flange 13 which is adapted to interfit snugly in the bore 14 of a gasket 15 of usual contour.

The said gasket 15 serves not only as a medium to provide a tight joint between the adjacent ends 16 and 17 of the carburator 18 and the intake manifold 19 respectively, but it also serves to support the venturi 10. Of course, in order to provide such a tight joint between these parts, the exterior diameter 20 of said flange 13 of venturi 10 must be smaller than the openings 21 and 22 of said carburator 18 and intake manifold 19 so that the metallic flange of said venturi can not interfere with the tightening of the gasket 15, usually made of pliable material.

The interior wall of said shell 11 is provided, as shown, with three aligned Venturi-like restricted passages 23, 24 and 25 and the throats of these passages are preferably of the same size, especially when my novel atomizer is used as an attachment and placed between the flanges of the carburator and intake manifold.

Each of said venturis is provided with individual and horizontally disposed slotted ports 26, 27 and 28 and individual and horizontally disposed deflecting grooves 29, 30 and 31 respectively.

At this time I wish to make it clear that in case it is desired to replace an old style venturi in an existing carburator the uppermost restricted passage 23 of my improved venturi must be, for obvious reason, of the same bore as the old style venturi.

These slotted ports 26, 27 and 28 aid materially in ensuring a complete breaking up of the heavier particles or condensations of liquid fuel which usually accumulates on the side walls of the openings 21 and 22 of the carburator 18 and the intake manifold 19 respectively.

In horizontal alignment with the upper face 32 of the exterior flange 13 of the venturi 10, I provide slotted ports 33 which serve as a positive means to direct all heavy ends of the mixture from the carburator and the outside of the venturi into the center-flow of the mixture regardless where the idling adjustment of the carburator may be located. As is well known, heavy ends of the fuel mixture, especially when the engine is idling, could not be sufficiently dispersed causing the fuel to be deposited as small drops especially in the vicinity of the adjustment part of the carburator, commonly called needle valve (not shown). Naturally, these drops of fuel are being drawn into the cylinders of the engine causing irregularities in the proper function of the latter. In addition, the fuel in this condition is also injurious in its action on the walls of the cylinders, due to the fact that it combines with the lubricant and produces carbonization.

By using my improved device of the present invention, deposits of drops and forming carbon on the walls are fully eliminated by dispersing the fuel in such a manner that every part of the air receives its share of the fuel.

It will be noted, that my novel venturi is not only adaptable to atomize the fuel mixture but it is also adapted to vaporize the fuel mixture delivered to the engine when said fuel is in transit from the carburator to the cylinders, this object being primarily accomplished by making the wall of the Venturi shell 11 as thin as possible to enable the venturi to absorb and retain the engine heat after the starting of the engine, especially while idling.

My improved atomizer and vaporizer, when placed between the carburator and the intake manifold operates in the following manner:

Assuming that my improved device is secured between the adjacent flanged ends 16 and 17 of the carburator 18 and the intake manifold 19 respectively.

On the intake or suction stroke of the engine, a mixture of gasoline and air is drawn from the carburator in a usual manner and then part of the light and dry portion of the fuel mixture may be readily drawn through the various restricted throats 23, 24 and 25 of my improved venturi 10, whereas the heavy and wet portion of the mixture, which usually accumulates on the wall of the opening 21 of the carburator 18 and, in this case, on the upper exterior wall 34 of said venturi 10, must pass through the slotted ports 33 from the inwardly flared deflector portion 36 of the venturi and thus into the center-flow of the mixture.

The upper end of said venturi 10 is provided

with a series of stepped-off ledges 37 which greatly assist in breaking up and deflecting the fuel mixture into the centerflow.

Each of said restricted passages 23, 24 and 25, commonly known as "venturi," is provided with independent and horizontally disposed slotted ports 26, 27 and 28 and independent deflecting annular ledges 29, 30 and 31 respectively.

As the fuel mixture is drawn from the carburator 18 through the venturi 10, the light particles or ends will traverse in the center of the flow and thus through the auxiliary venturis 23, 24 and 25 of said venturi 10, and part of the heavy particles will be broken up on the stepped-off annular ledges 37 and part will enter the interior of the venturi 10 through the slotted ports 33; the latter exclusively serving to permit all the heavy ends of the mixture, usually accumulating on the interior wall of the flanged opening 21 of the carburator 18 and the exterior wall 34 of the venturi 10, to be sucked through said auxiliary venturis 23, 24 and 25. Parts of the heavier ends of the fuel mixture along the flared wall 39 of auxiliary venturi 23 are drawn through the narrow ports 26, further broken up and deflected along the beveled edges 40 and 41 and again returned to the interior of the venturi 10 to the center-flow through the ports 27. The remaining heavy ends of the mixture will be atomized when striking the annular ledge 30 and deflected into the center stream of the mixture.

In order to completely nebulize the fuel mixture, a portion of the same is drawn outwardly or sucked inwardly through the slotted ports 28, thence broken up and inwardly deflected to the center-flow by the stepped-down ledges 31 thereby finally atomizing the fuel mixture.

Also, it will be observed, that by providing the exterior of the circumferential edges of the slotted ports 26, 27 and 28 with flared edges 40 and 41, a Venturi effect between the outer wall of the venturi 10 and the inner wall of the flanged end of the intake manifold 17 may be established permitting an uninterrupted turbulence of the fuel mixture surrounding the lower exterior of the venturi 10. Also, it will be apparent since my novel venturi is of substantially thin construction, the same will at all times be sufficiently hot, after the starting of the engine, to effect vaporization of fuel globules without the aid of special heating devices.

Obviously, by virtue of the novel construction of my improved atomizer and vaporizer a more perfect mixture of the gasoline and air is produced, than has heretofore been done, practically all of the fuel drawn into the manifold and the cylinders of the engine will be in a nearly perfect nebulized state, thereby ensuring the passage of a much dryer fuel mixture into the intake manifold than would be possible where the fuel mixture is passed directly from the carburator to the said intake manifold.

Although, my novel venturi has been illustrated and described as an attachment between the flange ends of a carburator and an intake manifold, it is evident that the same may be used, if so desired, as a vital portion of a carburator.

Extensive experiments have shown that three auxiliary venturis produce perfect results, but of course, if desired, two or more than three may be used.

While certain specific embodiments of the invention have been described and illustrated in the foregoing, the invention is not limited thereto

as numerous modifications and changes will suggest themselves to those skilled in the art which do not depart from the spirit of the invention as set forth in the following claims.

5 I claim:

1. In a fuel atomizer for internal combustion engines adapted to be clamped between the flanged ends of a carburator outlet and intake manifold comprising a one piece metallic cylindrical body provided near its upper end with an exterior and integral annular flange adapted to securely interfit in the bore of a gasket member of the same contour as the aforesaid flanged ends; a plurality of interiorly disposed and axially aligned venturis, each of which having a restriction of uniform dimension, horizontally disposed peripheral slotted ports and deflecting ledges; the exterior of said slotted ports being flared upwardly and downwardly, thereby permitting circulating and additionally breaking up of the heavy ends of the fuel, and means for maintaining the structure spaced from the interior wall of the ends of the intake manifold and the carburator outlet.

2. In a fuel atomizer for internal combustion engines adapted to be clamped between the flanged ends of a carburator outlet and intake manifold comprising a one piece metallic cylindrical body provided near its upper end with an exterior and integral flange adapted to securely interfit in the bore of a gasket member of the same contour as the aforesaid flanged ends; a plurality of interiorly disposed and axially aligned venturis, each of which having a restriction of uniform dimension, horizontally disposed peripheral slotted ports and deflecting ledges; the exterior of said slotted ports being flared upwardly and downwardly, thereby permitting circulating and additionally breaking up of the heavy ends of the fuel, means for maintaining the atomizer structure spaced from the interior wall of the ends of the intake manifold and the carburator outlet, the diameter of said flange of the fuel atomizer and the bore of said gasket member being smaller than the interior of the flanged ends of said carburator outlet and intake manifold.

WILLIAM J. LINN.