

J. E. THEBAUD.
 AUXILIARY AIR INLET DEVICE FOR INTERNAL COMBUSTION ENGINES.
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1,121,307.

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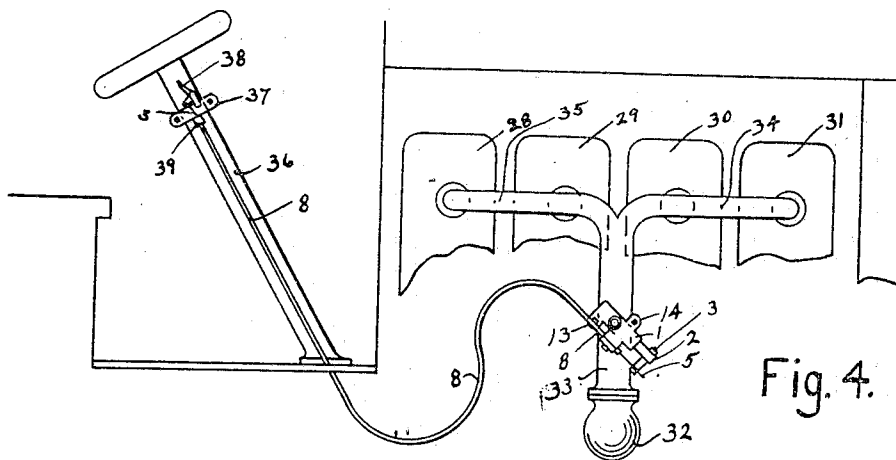


Fig. 4.

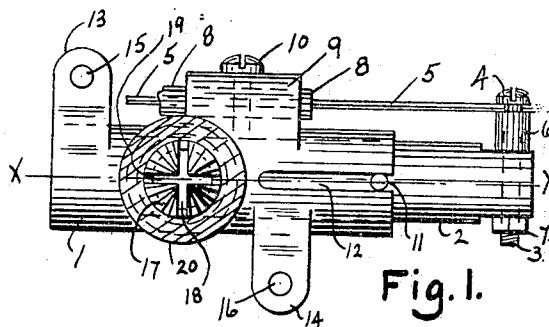


Fig. 1.

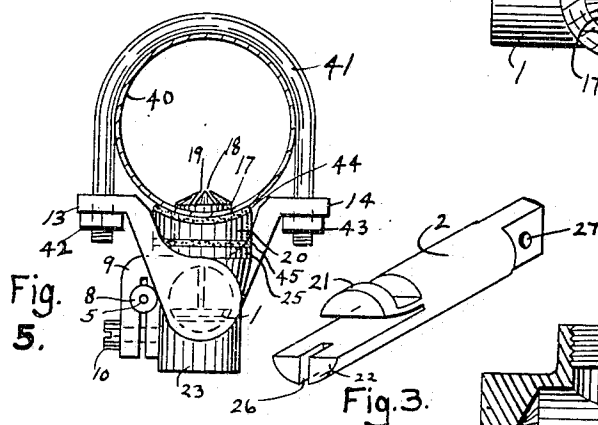


Fig. 5.

Fig. 3.

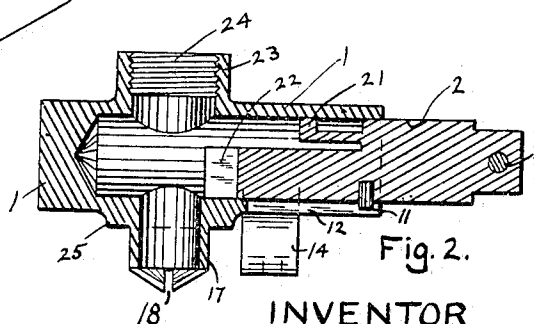


Fig. 2.

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AUXILIARY AIR-INLET DEVICE FOR INTERNAL-COMBUSTION ENGINES.

1,131,307.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN EDWARD THEBAUD, a citizen of the United States, and a resident of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Auxiliary Air-Inlet Devices for Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

Like figures of reference refer to like parts.

This invention relates to manually operated devices adapted to admit extra air to the gaseous mixture in a manifold pipe used with internal combustion engines.

The objects of my invention are to provide means, under the control of the operator, for admitting and governing the admission of additional air to a gaseous mixture passing through a conduit or manifold pipe on its way from a carbureter to the cylinder of an internal combustion engine, to increase vaporization within said mixture and to provide means for admitting said additional air in flat streams, or ribbon-like currents, transverse to the stream lines of the fluid coming from the said carbureter, without materially decreasing the area of flow through said pipe with any obstruction.

This invention consists of certain details of construction, including a special valve, with controlling means attached thereto, which can be operated at a convenient point by the chauffeur.

The details of construction of my invention are hereinafter described, its operation is explained and what I claim is set forth.

In the drawings: Figure 1 is a bottom plan of my special slide valve. Fig. 2 is a longitudinal section taken on the line $x-x$ of the valve shown in Fig. 1, but in an upright position. Fig. 3 is a prospective view of the plunger of said valve. Fig. 4 is a diagrammatic elevation showing the relative position of my invention to the steering-post, engine cylinders, manifold pipe and carbureter of an automobile, when installed upon the same. Fig. 5 is an end view of

said valve showing same attached to a section of a manifold pipe.

In Fig. 1, 1 is the casing of the said valve in which is slidably mounted the plunger 2. Passing through the plunger 2, near its outer end is a bolt 3, provided under its head 4 with a hole through which passes a wire 5. Between the wire 5 and the plunger 2 and surrounding the bolt 3, is a tubular piece 6. By means of the nut 7, the wire 5 is clamped between the head 4 and the tubular piece 6. The wire 5 is adapted to reciprocate within the flexible tube 8, which is positioned within a clamp 9 and held there by the screw 10. Fixed in the plunger 2, is the pin 11, adapted to reciprocate in the slot 12, in the casing 1. Integral with the casing 1 are the ears 13 and 14, having respective holes 15 and 16 adapted to receive a U-bolt. Projecting from the casing 1 is a closed tubular projection 17, the outer end of which is conical and is slotted at right angles as shown at 18 and 19. Surrounding the said projection 17, is an adapting washer 20.

In Fig. 2, the plunger 2 is shown having a spring lip 21, adapted to engage and press against the inner wall of the casing 1. The inner end 22 of the plunger 2 is longitudinally slotted. Projecting above and from the casing 1 is a cylindrical portion 23, which is internally threaded at 24 to receive a pipe. 25 is a circular boss integral with the said casing 1 and surrounding the tubular projection 17.

In Fig. 3, the position of a slot 26 in the end 22 of the plunger 2 is shown. The free end of the lip 21 is shown partially raised, as is the case when the said plunger 2 is not confined within the casing 1 of said valve. 27 is a hole in said plunger 2 adapted to receive the said bolt 3. It will be observed that the end of the plunger 2, containing said hole 27, is flattened on each side transverse to said hole 27.

In Fig. 4, 28, 29, 30 and 31 represents combustion cylinders of an automobile engine. 32 is a carbureter. 33 is a manifold pipe having branches 34 and 35 leading to said cylinders. 36 is a steering-post upon which is mounted a clamp 37. Fixed to an extension 39 of said clamp 37, is a flexible tube 8. The lower end of said flexible tube 8 is shown fixed within the clamp 9, on the valve casing 1; said valve casing being mounted upon said manifold pipe 33, in a

manner to have the tubular projection 17 shown in Fig. 1 pass through the wall of said manifold pipe in Fig. 4. Within the flexible tube 8 is the wire 5, fixed at its lower end to the plunger 2 and pivoted at its upper end to the said L-lever 38.

In Fig. 5 the tubular projection 17 is shown penetrating the wall 40 of a section of the manifold pipe. Surrounding said wall 40 is a U-bolt 41, passing through the ears 13 and 14 of said valve and binding the same to said wall 40 by means of the nuts 42 and 43. In this figure is shown the use of the adapting washer 20 which conforms to the curvature of the said wall 40. Between said adapting washer 20 and said wall 40 is a flexible washer 44 and between said adapting washer 20 and said boss 25 is another flexible washer 45.

In operation, the valve shown in Fig. 4 is closed pending the starting of the engine of the automobile. After the engine has been running a short time, the L-lever 38 is turned partially down forcing the wire 5 through the flexible tube 8 to push out the plunger 2, to open the special slide valve, positioned upon the manifold pipe 33, to admit air to the gaseous mixture within said pipe. As the air is drawn into the said mixture through the said valve, it passes through narrow cross slots, such as 18 and 19, shown in Fig. 1, and thereby enters in flat or ribbon-like cross streams or currents, tending to break up any stream lines of gasoline coming from the carbureter 32 and causing the gaseous mixture to be more thoroughly mixed and vaporized before it enters the cylinders of the said engine. When the said engine is performing heavy duty, the valve is full open, but when the engine is carrying only light loads the amount of air admitted through this special valve is controlled by the position of the slot 26, of the plunger 22, according as this slot 26 is eclipsed by the inner wall of the tubular projection 17. By the use of the slot 26 it is possible to manually control and grade small quantities of air entering the manifold pipe, in a manner to obviate the necessity of any delicate manipulation of the lever 38, in its angular movement. The control thus afforded the chauffeur in running his engine has, upon trial of this device, proven very satisfactory. The admission of the air in one or more flat or ribbon-like streams or currents, transverse to the path of the gaseous mixture passing through the manifold pipe, not only tends to perfect that mixture, lending to complete combustion, but results in a more complete vaporization of the combustible fluid and uniformity of mixture. With the use of this device, I have been able to increase the mileage run per gallon on various automobiles. I believe this result is due in a great measure to the flat streams of air

emerging from the slotted ends of the tubular projection 17, creating favorable internal adverse currents within the said mixture.

I am aware that other valves, manually operated, are in use for governing the admission of auxiliary air to the gaseous mixture in the manifold pipe, but I know of none that have the specific feature embodied in my device for governing the amount of air used and of admitting said air to a manifold pipe through a slotted opening.

Having described my invention, I claim.

1. In a device adapted to be mounted upon a manifold pipe of an internal combustion engine, to control the admission of air to a gaseous mixture within said pipe, between the carbureter and the cylinder of said engine, a slide valve comprising a casing having a longitudinal chamber provided with air ports, a plunger adapted to reciprocate within said chamber to afford a closure across one of said air ports, a tubular projection from said casing affording a channel between one of said air ports and said manifold pipe, said projection being covered by a conical cap, said conical cap being provided with a slotted aperture, means to manually control the plunger and means on said casing adapted to secure said slide valve to said manifold pipe.

2. In a device affording means for manually controlling the admission of air to the manifold pipe of an internal combustion engine, a slide valve comprising a casing having a longitudinal chamber provided with air ports, a plunger adapted to reciprocate within said chamber to afford a closure across one of said air ports, said plunger being provided at its inner end with a longitudinal slot, a spring lip upon said plunger positioned midway of its ends and adapted by contact with the inner wall of said chamber, to cause said plunger to seat tightly over one of said air ports, a tubular projection from said casing affording a channel between said chamber and said manifold pipe, said projection being covered by a conical cap, said conical cap being provided with a slotted aperture, means to manually control the plunger and other means on said casing adapted to secure said slide valve to said manifold pipe.

3. In a device affording means for manually controlling the admission of air to the manifold pipe of an internal combustion engine, a slide valve comprising a casing having a longitudinal chamber provided with air ports, a plunger adapted to reciprocate within said chamber to afford a closure across one of said air ports, said plunger being provided midway of its ends with a spring lip adapted to contact the inner wall of said chamber to cause said plunger to seat tightly over one of said air ports, a tubular projection from said casing affording a

channel between one of said air ports and a manifold pipe, said projection being covered by a conical cap, said conical cap being provided with a transverse slotted aperture, means to manually control the plunger and other means on said casing adapted to secure said slide valve to said manifold pipe.

4. In a device affording means for manually controlling the admission of air to the manifold pipe of an internal combustion engine, a slide valve comprising a casing having a longitudinal chamber provided with air ports, a plunger adapted to reciprocate within said chamber to afford a closure across one of said air ports, said plunger being provided midway of its ends with a spring lip adapted to contact the inner wall of said chamber, to cause said plunger to seat tightly over one of said air ports, a pin projecting from said plunger, and in sliding engagement with a longitudinal slot in said casing, a tubular projection from said casing affording a channel between said chamber and said manifold pipe, said projection being covered by a conical cap, said conical cap being provided with a transverse slotted aperture, means to manually control the plunger and other means on said casing adapted to secure said slide valve to the said manifold pipe.

5. In a device affording means for manually controlling the admission of air to the manifold pipe of an internal combustion engine, a valve comprising a casing having an internal chamber provided with air ports, closure means adapted to transverse one of said air ports, a tubular projection from said casing affording a channel between said chamber and said manifold pipe, a cap covering the extremity of said projection, said cap being provided with a narrow slotted aperture whereby air, on passing through said aperture, enters said pipe in a relatively broad and thin solid stream, and means adapted to manually control said valve.

6. In a device affording means for controlling the admission of air to the manifold pipe of an internal combustion engine, a valve comprising a casing including an air port, closure means to traverse said air port, means establishing communication between said air port and said manifold pipe, an element disposed in the line of said communication between the said air port and the said manifold pipe, said element being provided with a narrow slotted aperture, whereby air, on passing through said aperture, enters said pipe in a relatively broad and thin solid stream, and means adapted to control said valve.

7. In a device affording means for controlling the admission of air to the manifold pipe of an internal combustion engine, a valve comprising a casing including an air port, closure means to traverse said port, means establishing communication between said air port and said manifold pipe consisting of a hollow projection from said casing, a cap covering the extremity of said projection, said cap having a narrow slotted aperture, whereby air, on passing through said aperture, enters said pipe in a relatively broad and thin solid stream, and means for controlling said valve.

8. As a new article of manufacture, a valve comprising a casing provided with an air inlet port and an air discharge port, a closure for said air inlet port, and a concavo-convex cap at the discharge port provided with a relatively narrow slot whereby a relatively broad and thin solid stream of air may be forced across the path of the stream line of gasoline globules passing through the manifold pipe of an internal combustion engine.

Buffalo, N. Y. Sept. 15, 1913.

JOHN EDWARD THEBAUD.

Signed in the presence of—
I. ELMER MIGHTON,
GEORGE A. COTTON.