

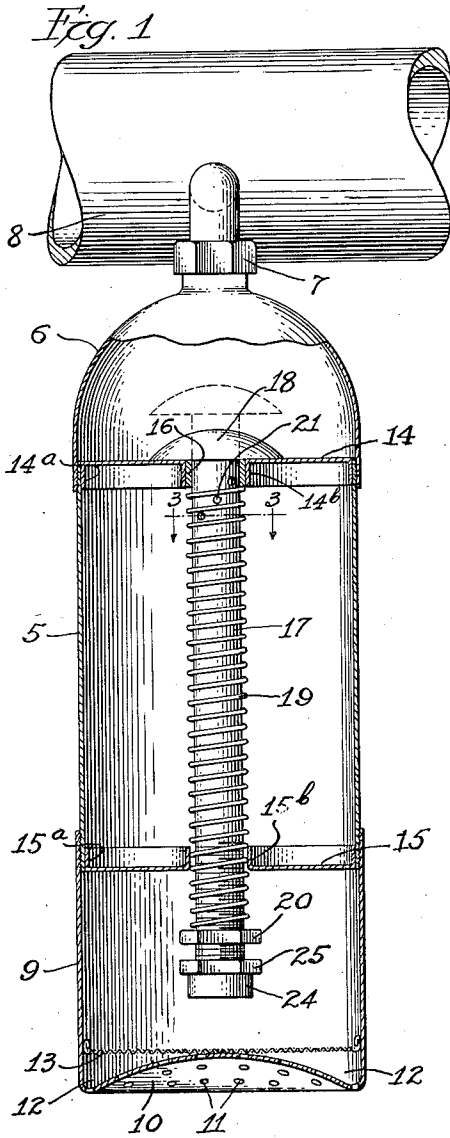
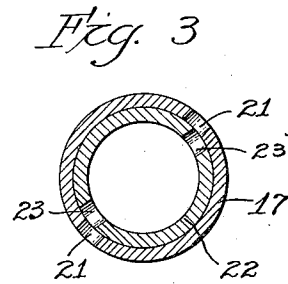
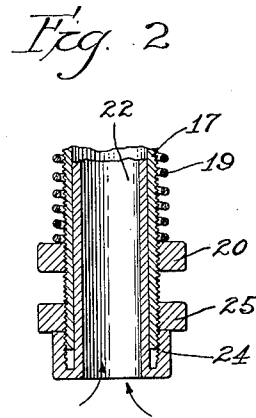
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J. J. TREFZ

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AIR INTAKE FOR MANIFOLDS

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Inventor:
JULIUS J. TREFZ
By *E. R. Rudy* Att'y.

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AIR INTAKE FOR MANIFOLDS

Julius J. Trefz, Chicago, Ill., assignor of one-half
to Otto Kaspar, Chicago, Ill.

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8 Claims. (Cl. 251—145)

My invention relates to an air supply device for the intake manifold of an internal combustion engine. The structure which I have devised is automatically operated through the medium of the suction from the engine that draws the gaseous vapor from the carburetor through the intake manifold to the cylinders of the engine.

My device is capable of being readily adjusted to take care of different makes or types of engines, and its operation is such that it automatically accommodates itself to different speeds of the engine or different amounts of suction from the cylinders. In other words, the greater the suction the greater the amount of air that is drawn into the gaseous vapor in the manifold and fed to the cylinders.

Furthermore, the operator of a motor vehicle may manually adjust this device according to different atmospheric pressures depending upon whether the vehicle is being driven in mountainous country or near sea-level. The device herein disclosed is adapted to increase the speed of operation of the engine and in actual tests has been found to increase the speed of the crank-shaft in a motor vehicle 200 R. P. M. to 300 R. P. M.

The apparatus which I have devised is simple and novel in construction; its parts are sturdy so that they will withstand severe usage; it is effective in performing its functions; it is easy to install as it does not require the use of special tools and may be installed by a person unfamiliar with mechanical work; and it is economical to produce so that it may be sold to the user for a reasonable retail price. Further objects and advantages will be apparent to persons skilled in the art after my invention is understood.

I prefer to practice my invention and to accomplish its numerous objects in substantially the manner hereinafter fully described and as more particularly pointed out in the claims. Reference is herein made to the accompanying drawing that forms a part of this specification.

In the drawing:

Figure 1 is a central longitudinal or axial section of a structure made in accordance with my invention.

Figure 2 is an enlarged sectional view of the lower portion of the structure illustrated in Fig. 1.

Figure 3 is an enlarged transverse section taken on line 3—3 of Fig. 1, looking in the direction of the arrows.

The drawing is somewhat schematic and is for the purpose of disclosing a typical or preferred embodiment of my invention, and in the drawing

like reference characters designate like parts where they appear in the different views.

The device comprises a hollow cylindrical body 5 having external threads on its upper and lower portions, the former of which threads receive the interiorly threaded lower portion of a tapered or dome-shaped cap 6 that screws on to the body. The top of the cap is provided with an outlet in the form of a coupling 7 whereby a connection and communication may be made with a convenient portion of the intake manifold 8 of an internal combustion engine such as used in motor-driven vehicles.

A cup-shaped member 9, having an interiorly threaded upper portion, is screwed upon the lower threads of the body and has its bottom wall 10 provided with air-inlet holes 11 and bulged inwardly to form an annular channel or gutter 12 at the juncture between the bottom and side walls of the member 9. An air-strainer 13, made preferably of fine wire mesh, is inserted into the member 9 and rests upon the bulge of the bottom wall 10 to prevent ingress of dust or foreign matter.

At the top and bottom ends of the cylindrical body 5 I have provided transversely disposed guide elements 14 and 15 respectively that are preferably correspondingly shaped and made from the same die. The top guide element 14 has an annular flange 14^a around its edge that is pendently disposed and fits inside the top portion of the body 5 to which it is secured by welding or otherwise, and said element is also provided with a central aperture that is surrounded by a depending flange 14^b that carries an inner bushing 16 the purpose of which will later appear. The lower guide element 15 has its outer annular flange 15^a upstanding and welded or otherwise secured in the lower end of the body wall 5, and said element has a central aperture surrounded by an upstanding flange 15^b that extends towards and axially aligns with the corresponding central flange 14^b of the other guide element.

The flange 15^b provides the lower guide or bearing for the hollow stem 17 of a mushroom valve body 18 that normally rests upon the upper surface of the transverse element 14, and the bushing 16 provides a stop against which the adjacent upper end of a coiled expansion spring 19 abuts to yieldably maintain the valve body in seated position. The lower portion of the hollow stem 17 projects below the lower guide element where it has external threads on which an adjusting nut 20 is screwed, and the spring 19,

which surrounds the stem, extends through the flange 15^b and has its lower end resting upon the nut 20.

There is a plurality of discharge ports 21 in the upper portion of the hollow stem 17 just below the valve body so that when the latter has been lifted a sufficient distance by the suction from the engine cylinders one or more of said ports will be exposed above the upper guide element 14 and the air drawn through these ports from the lower open end of the hollow stem will be sucked into the dome and pass into the manifold where such air mingles or mixes with the gaseous vapor in transit from the carburetor to the engine cylinders.

I have provided means for adjusting the size or capacity of the discharge ports which means comprise a metal tube 22 of an outside diameter that permits it to be adjustably inserted inside the hollow stem 17. The upper portion of the tube 22 is provided with ports 23 that may be registered with ports 21 in the stem or may be moved with respect thereto in order to restrict the sizes of said ports 21 as shown in detail in Figure 3. This adjustment and movement of the inner tube 22 is accomplished by providing an L-shaped annular flange 24 at the lower end of said tube. The upstanding portion of this flange 24 is spaced from the tube 22 a distance equal to the thickness of the wall of the tubular valve spindle 17 and said upstanding portion has internal threads so that it may be screwed up on the threads at the lower portion of the spindle. After being adjusted to the proper position the inner tube may be secured against accidental movement by screwing down a lock nut 25 on the spindle against the upper edge of the flange 24.

It will be understood that in the event it is desired to shut off this device so that no air will pass through it to the manifold, this may readily be done either by rotating the inner tube 22 to close the air discharge ports 21, or by screwing up the nut 20 to tighten the spring sufficient to overcome the suction that raises the valve body 18 and exposes the ports 21 in normal operation.

Modifications of the structure herein shown may be made without departing from the principles involved, and it should be noted that the drawing and the within description are given for the purposes of understanding only and that no unnecessary limitations are to be understood therefrom.

What I claim is:

1. A device of the kind described comprising a body provided with guide means, a tube closed at one end and reciprocable in said guide means and having ports at its closed end that are opened and closed when said tube is reciprocated, a hollow cap surrounding the ported end of said tube for establishing communication between said device and a suction passageway, and means for altering the sizes of said ports and thereby regulating the quantity of fluid discharged from said ports into said cap.

2. A device of the kind described comprising a body provided with guide means, a tube closed at one end and reciprocable in said guide means and having ports at its closed end that are opened and closed when said tube is reciprocated, a hollow cap surrounding the ported end of said tube for establishing communication between said device and a suction passageway, and means operable from an end of said tube for altering the sizes of said ports and thereby regulating the

quantity of fluid discharged from said ports into said cap.

3. A device of the kind described comprising a body provided with guide means, a tube closed at one end and reciprocable in said guide means and having ports at its closed end that are opened and closed when said tube is reciprocated, a hollow cap surrounding the ported end of said tube for establishing communication between said device and a suction passageway, and means operable from the opposite end of said tube for altering the sizes of said ports and thereby regulating the quantity of fluid discharged from said ports into said cap.

4. A device of the kind described comprising a body provided with guide means, a tube closed at one end and reciprocable in said guide means and having ports at its closed end that are opened and closed when said tube is reciprocated, a hollow cap surrounding the ported end of said tube for establishing communication between said device and a suction passageway, and an adjustable hollow core within said tube having ports at its inner end that normally register with the ports in said tube said tube and core being movable relative to each other whereby to regulate the quantity of fluid discharged from said ports into said cap.

5. A device of the kind described comprising a body provided with guide means, a tubular spindle reciprocable in said guide means and having ports adjacent one end certain of which ports are adapted to be opened and closed by the reciprocation of the spindle in said guide means, a coiled expansion spring surrounding the spindle and having one end abutting said guide means, an adjustable stop on said spindle and engaged with said spring to adjust the tension thereof, means for altering the sizes of said ports and thereby regulating the quantity of fluid discharged from said ports, and means on said body for establishing communication between said ports and a suction passageway.

6. A device of the kind described comprising a body provided with guide means, a tubular spindle closed at one end and movable longitudinally in said guide means and having discharge ports adjacent said closed end that register with said guide means, a coiled expansion spring surrounding said spindle and having an end abutting said guide means, an adjustable stop engaged with said spring to adjust the tension thereof, means for altering the sizes of said ports and thereby regulating the quantity of fluid passed through said ports, and a hollow cap on said body and surrounding the ported end of said spindle for establishing communication between the above described structure and a suction passageway.

7. A device of the kind described comprising a body having a guide, a hollow spindle closed at one end and having ports adjacent said closed end and normally in registry with said guide, said spindle being capable of longitudinal movement in said guide to expose certain of said ports, an adjustable stop on the other end of said spindle, an expansion spring interposed between said guide and stop for maintaining said ports normally closed, a tube telescoped by said spindle and having means on its end portion adjacent said ports for adjusting the sizes of said ports and thereby regulating the quantity of fluid passing through the latter, and means on said body for establishing communication with a suction passageway.

8. A device of the kind described comprising a body having a guide, a spindle reciprocally mounted in said guide and consisting of a pair of telescoped tubes, having lateral discharge ports
5 at one end that are adapted to register with each other, the outer tube being closed at its ported end, an adjustable spring coacting with said spindle for yieldably maintaining the latter in a position with its ports opposite said guide, means
10 for locking the inner tube in divers positions with respect to the outer tube to adjust the sizes of

said ports and thereby vary the quantity of fluid that may pass through said ports, and a hollow cap on said body enclosing the ported ends of said tubes and adapted to establish communication with a suction passageway whereby said
5 spindle may be moved by the suction longitudinally in said guide to expose certain of the ports for the egress of fluid passing through the inner tube.

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