

G. BAUJARD.

ATOMIZER.

APPLICATION FILED NOV. 23, 1909.

985,500.

Patented Feb. 28, 1911.

Fig. 1.

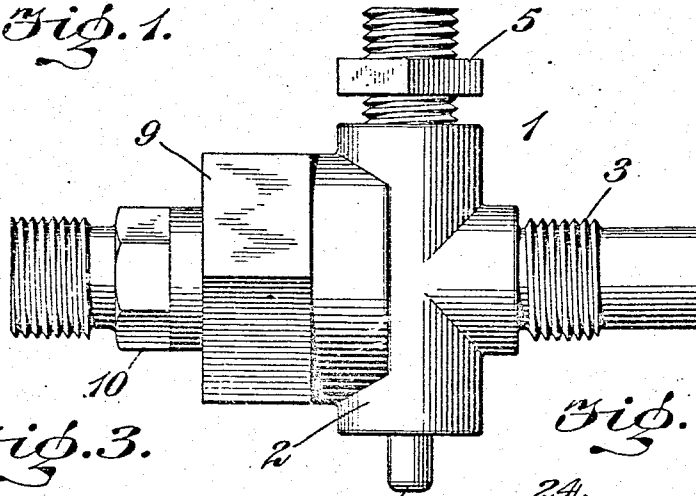


Fig. 3.

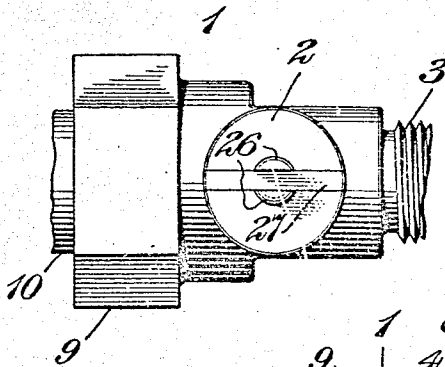


Fig. 4.

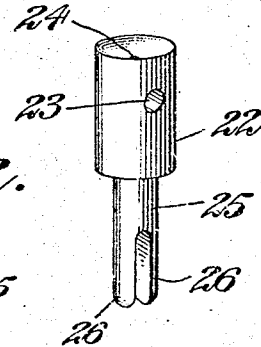
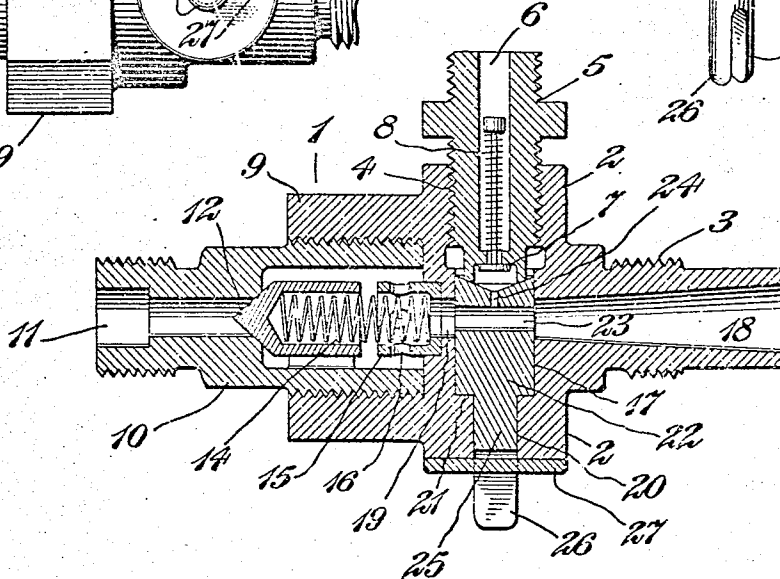


Fig. 2.



WITNESSES

W. C. Abbott
W. C. Abbott

INVENTOR

Georges Baujard

J. E. Springer
ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGES BAUJARD, OF PARIS, FRANCE.

ATOMIZER.

985,500.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed November 23, 1909. Serial No. 529,553.

To all whom it may concern.

Be it known that I, GEORGES BAUJARD, a citizen of the French Republic, and a resident of Paris, France, have invented certain Improvements in Atomizers, of which the following is a specification.

This invention relates to certain improvements in atomizers such as are particularly designed and adapted for employment in connection with internal combustion engines and the like, and has for its object to provide a device of this character of a comparatively simple and inexpensive nature, and of a compact and durable construction, capable of employment for producing a substantially complete atomization of the charge in a manner calculated to afford effective protection against the supply of liquid fuel to the combustion chamber of the engine or other appliance in connection wherewith the improved atomizer is employed and which shall present certain features of novelty and improvement, whereby the atomizer is rendered capable of being effectively used for the supply of different liquid fuels, or in connection with engines or equivalent devices of different types and capacities.

The invention consists in certain novel features of the construction, and combinations and arrangements of the several parts of the improved atomizer, whereby certain important advantages are attained, and the device is rendered simpler, less expensive and otherwise better adapted and more convenient and effective for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In order that my improvements may be the better understood, I will now proceed to describe my invention with reference to the accompanying drawings, wherein—

Figure 1 is a side elevation showing an atomizer constructed according to my invention, disconnected from the motor and from the fuel and air supply in connection wherewith it is ordinarily employed; Fig. 2 is a sectional view taken vertically and axially through the improved atomizer, and illustrating the internal structure thereof; Fig. 3 is a partial underside view of the atomizer constructed as shown in Figs. 1 and 2; and Fig. 4 is a detached perspective view illustrating the formation of the removable or

interchangeable controlling member or plug forming part of my improvements.

As shown in these views, the atomizer is provided with a metallic body portion or casing 1, of appropriate contour, having a central vertically extended cylindrical portion 2, from one side of the central part whereof is extended an externally screw-threaded discharge nozzle 3, integrally connected with the casing or body portion, and adapted for detachable screw connection with the wall of the cylinder or combustion chamber of the motor wherewith the atomizer is to be used in such a manner as to discharge the combustible mixture thereto.

The upper extremity of the cylindrical part 2 of the casing or body portion 1 is internally screw-threaded, as shown at 4, to receive a removable screw plug or connection 5, the upper extremity of which is externally screw-threaded for connection with a pipe leading to a source of fuel supply, and said plug or connection 5 is provided with an axial bore 6 through which the liquid fuel conveyed by such supply pipe is to be led within the casing or body portion to the inclosed vaporizing or atomizing devices as will be hereinafter explained. 7 represents a valve controlling the admission of such liquid fuel by way of said passage 6, and 8 represents a spring connected with said valve in such a manner as to exert its tension to lift the valve and normally hold the same closed and in contact with its seat, whereby the admission of the liquid fuel into the casing or body portion is normally prevented.

At the side of the cylindrical portion 2 opposite to the nozzle or connection 3, the casing or body portion is also provided with a centrally positioned internally screw-threaded nipple 9, wherein is engaged a tubular screw connection or coupling 10, having an axial passage 11, and provided with a screw-threaded extremity adapted for connection with a pipe or the like leading to a reservoir containing compressed air, whereby such compressed air is conveyed within the casing or body portion 1 for the formation of the combustible charge therein as will be hereinafter explained.

12 represents a valve which is inclosed within the coupling member 10 and is pressed by a spring 14 into seated or closed position in such a way as to normally pre-

vent the admission of the compressed air through the passage 11 into the casing or body portion 1. As herein shown, said spring has its end opposite to valve 12 seated within a cup 15 arranged at the central part of the nipple 9, and provided with lateral ports 16 through which the air from passage 11 is admitted into its interior when valve 12 is opened.

17 represents a cylindrical bore produced axially within the vertically directed cylindrical central portion 2 of the casing or body portion 1, the upper end of said axial bore 17 being in communication with the screw-threaded passage 4 at the upper end of said cylindrical portion 2, so that free access is permitted thereto when the screw plug or coupling member 5 is withdrawn, and 18 represents a conical or flared discharge passage produced within the discharge nozzle or connection 3, being extended at right angles from said bore 17, with which it has communication at its smaller end, while its larger or expanded extremity is adapted for communication with the cylinder or combustion chamber of the motor in such a manner as to convey and discharge the vaporized or atomized fuel thereinto with a minimum of condensation and resistance. The flared or conical bore or passage 18 within the discharge nozzle 3 is in axial alinement with the passage 11 within the air connection 10, and the wall of the axial bore 17 within the cylindrical portion 2 is apertured as shown at 19 at a point diametrically opposite to the smaller end of said conical bore or passage 18 and in alinement therewith and with the compressed air passage 11, so as to permit the flow of such compressed air as may pass the valve 12 along a substantially straight passage to and through the discharge nozzle, subject to regulation by improved controlling means housed in the vertically directed bore 17, as will be hereinafter explained. Such controlling or regulating means comprises, as herein shown, a removable plug or controlling member 22, provided at its upper end with a cylindrical body portion or head, as clearly shown in Figs. 2 and 4, of a diameter adapted to fit snugly within said cylindrical vertical bore 17, while being capable of removal through the screw-threaded opening 4 at the upper extremity of the vertically directed cylindrical portion 2 of the casing 1, upon removal of the screw plug 5 therefrom, the lower end of said plug or controlling member 22 being reduced in diameter to produce a rounded axially extended stem 25, pendant below the head or enlarged upper end of the controlling member, and adapted to fit snugly within a correspondingly formed cylindrical bore 20 produced at the lower end of the cylindrical casing portion 2, and open at the underside thereof as shown in Figs. 2 and 3, its lower extremity being centrally bisected by a transversely extended detent strip 27 countersunk in the lower surface of the casing portion 2, and capable of engagement between forks or bifurcations 26, 26 produced at the lower end of the reduced stem 25 of the controlling member 22 in such a manner as to effectively prevent turning movement of said member 22 within the bore 17 when positioned therein for use. The forked or bifurcated lower extremity of said stem 25 is of such a length as to depend below the under surface of the casing portion 2 when member 22 is in position within bore 17, so that the fingers may be engaged therewith to conveniently push the member 22 upwardly when it is desired to remove the same from the casing or body portion of the atomizer.

23 represents a bore or passage produced transversely and diametrically through the enlarged upper head portion of the controlling member 22, in such relation to the forks or bifurcations 26, 26 as to be accurately maintained thereby in axial alinement with the passages 18 and 19 at diametrically opposite sides of the wall of the bore 17 wherein said member 22 is inserted for use, so that the compressed air admitted by way of the passage 11 under control of the valve 14 is conveyed through said bore or passage 23 of the controlling member and discharged into the smaller end of said tapered or conical passage 18, and 24 represents a duct or passage produced axially in the upper extremity of said member 22 and adapted to receive the liquid fuel admitted to the casing by way of passage 6 under control by valve 7, the lower end of said duct or passage 24 being in communication with the central part of the transverse passage or bore 23, so that the admitted liquid fuel is conveyed into the central part of said bore or passage 23 in order that it may be acted upon by the air coursing therethrough when valve 14 is opened, in order that such admitted liquid fuel may be effectively vaporized and atomized by the operation of such air in such a manner as to produce an extremely light and fluid combustible charge when such air is permitted to expand within the tapered bore or passage 18 of the discharge nozzle 3.

In adapting my improvements, in the form above described to different sizes or types of motors, and the like, and to different kinds of fuels, the passages 23 and 24 within the controlling member 22 should, if the best results are to be attained, be made in properly calculated diameters so that the proper volumes of air shall be supplied for vaporizing or atomizing the desired volume of fuel, and the removable character of the plug or member 22 is particularly well adapted for this purpose, since it permits o

changing the plugs or members 22 in order to adapt the one atomizer to different engines or for use with different kinds of fuel.

In the use of my improvements, as herein set forth, the liquid fuel may be discharged through the passage 6 at proper times by the operation of a pump timed with the motor in a well known way, and the structure is such that the pressure produced within the cylinder or combustion chamber of the motor by the explosion of the charge will normally operate to reinforce the action of the springs 8 and 14 so as to effectively close the passages 6 and 11 against the entry of fuel and air except at such times as the pressure within such combustion chamber or cylinder of the motor shall fall after having been exhausted of the spent gases, whereupon the air and fuel are permitted to enter through their appropriate passages, in order that the fuel may be atomized or vaporized to produce the fresh charge to be supplied to the motor, as above set forth.

From the above description of my improvements, it will be seen that the atomizer constructed according to my invention is of an extremely simple, and comparatively inexpensive construction, and is particularly well adapted for use by reason of its novel, improved and compact character, and it will also be obvious from the above description that the device is susceptible of considerable modification without material departure from the principles and spirit of the invention, and for this reason I do not desire to be understood as limiting myself to the precise formation and arrangement of its several parts herein set forth in carrying out my invention in practice.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. In an atomizer, the combination with a body having an inlet port for fuel, an inlet port for compressed air, and a discharge port; of a plug removably positioned within said body having a passage in communication with the ports of the body, a bifurcated stem projecting from the plug, and means carried by the body passing between the forks of the bifurcations to hold the plug against displacement.

2. In an atomizer, a body having an inlet for fuel, an inlet for compressed air, and a discharge port, one in communication with the other, an inner portion of the air inlet being enlarged, a cup member having openings in its sides arranged at one end of the enlarged portion and a valve for the op-

posite end of the enlarged portion, the movement of the valve in one direction being limited by contact with the ends of the cup member.

3. In an atomizer, a body having an inlet for fuel, an inlet for compressed air, and a discharge port, a portion of the air inlet being enlarged, a cup member seated in one end of the enlarged portion of the air inlet, said member having openings in its sides, a valve acting in conjunction with the opposite end of the enlarged portion, and a spring interposed between the valve and the cup member to hold the valve normally in closed position.

4. In an atomizer, a body portion having an inlet for air, a discharge port, and a bore in communication with the inlet and discharge, a plug secured within the bore having a passage in communication with the inlet and discharge, said passage being an inlet for fuel, a valve for the lower end of the passage, a stem projecting from the valve within the passage, and a spring surrounding the stem exerting pressure thereon to hold the valve normally closed.

5. A device of the character described comprising a body portion having an inlet for air, a discharge port and a bore in communication with the inlet and discharge port, a plug secured within the bore of the body having a passage in communication with the inlet and discharge port, a tubular connection insertible within the body, said tubular connection being in communication with the passage of the plug, and a valve carried by the connection for controlling the passage of the connection.

6. A device of the character described comprising a body portion having an inlet for air, a discharge port and a bore in communication with the inlet and discharge port, a plug secured within the bore of the body having a passage in communication with the inlet and discharge port, a tubular connection insertible within the body, said tubular connection being in communication with the passage of the plug, and a valve carried by the connection for controlling the passage of the connection, said connection contacting with the plug to hold said plug against movement longitudinally of the bore.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGES BAUJARD.

Witnesses:

J. B. COLLINGER,
W. C. ABBOTT.