

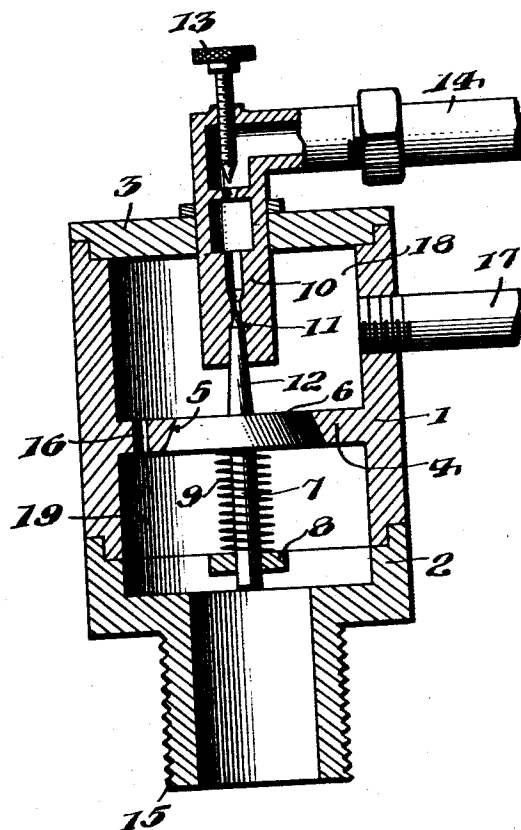
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VALVE

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UNITED STATES PATENT OFFICE.

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VALVE.

Original application filed October 21, 1925, Serial No. 64,046. Divided and this application filed December 22, 1925. Serial No. 76,999.

This invention relates to an improvement in "valves" and is a division of my former application Serial No. 64,046, filed October 21, 1925.

section through a valve made in accordance with this invention.

5 The object of the invention is to provide an improved valve which may be automatically actuated by either suction or pressure for controlling the supply of fluid therethrough.

10 A further object of the invention is to provide a valve of this character which may receive and mix two or more different fluids and for controlling the passage of these mixed fluids therethrough.

15 In carrying out this invention, a valve casing is provided with a transverse partition therein, which has a suitable valve seat in the center thereof for receiving the disk of a spring actuated valve, the latter carrying a

20 needle valve stem which extends into a nipple projecting into the valve casing from the cap thereof, and which nipple is also provided with a valve seat for receiving the needle valve stem. The partition within the

25 valve casing separates the same into separate compartments, one of which is adapted to receive the fluids and mix the same before allowing them to pass through the first mentioned valve into the other compartment. Consequently, the supply pipe for

30 one of the fluids is connected with the nipple while the other supply pipe communicates with that same compartment through the side thereof. The fluids thus pass into one of the compartments and are mixed after

35 which they pass through the valve in the partition into the other compartment or out through a suitable pipe. A by-pass is provided in the partition so as to allow a small

40 quantity of one fluid to pass therethrough even when that valve is closed. For the purpose of illustrating my invention, I have shown in the accompanying drawings a form thereof which is at present preferred by me,

45 since it will give in practice satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my

50 invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

The accompanying drawing is a vertical

55 A valve casing 1 is provided with a cap 2 at the lower end thereof and a cover 3 at the opposite or upper end. This casing 1 is also provided with a transverse partition 4 therein, which has a valve seat 5 for receiving a valve disk 6. The flat valve disk 6 is formed on the valve stem 7 which is

60 slidable through an opening in the web 8 extending across through the lower end of the cap 2 and a spring 9 surrounds the valve stem 7 and is interposed between the web 8 and the valve disk 6 for normally forcing and holding the disk on its seat 5.

An elbow 10 is formed in the cover plate 3 and said elbow has an orifice 11 in the 70 lower end thereof, forming a valve seat for receiving the upper end of the needle valve stem 12, which extends upwardly from and is carried by the valve disk 6. A manually controlled needle valve 13 is provided in the 75 upper end of the elbow for controlling the passage of fluid into said elbow from the pipe 14, which is connected with the upper end thereof.

The lower end of the cap 2 terminates in 80 an extended nipple 15, the exterior of which is threaded to be screwed into any suitable device to which the valve is adapted to be applied as the intake manifold of an internal combustion engine. A by-pass 16 in 85 the form of a small orifice is provided in the partition 4 in order to allow a small quantity of fluid to pass through the valve even when the valve 6 is on its seat. A supply pipe 17 is tapped into the upper compartment 18 of the valve into which the elbow 10, also, extends. This compartment 18 forms a mixing chamber for the fluids when- 90 ever the valve is used as a mixing valve and the compartment 19 below the partition 4 serves as an outlet for the fluids. 95

The valve disk 6 may be unseated by either suction or pressure but preferably by the former and the fluids are drawn into the compartment 18 through the pipes 14 100 and 17 where they are mixed after which they pass through the valve seat 5 into and through the compartment 19 and the nipple 15. Whenever the valve disk 6 is off of its seat, the needle valve 12 is likewise unseated 105 so as to allow the fluid to pass from the pipe

14 into the mixing chamber 18. The valve 13 controls the quantity of fluid which passes from the pipe 14 through the elbow 10. The by-pass 16 allows a small quantity of fluid to pass from the pipe 17 through the mixing valve and the nipple 15 even when the valve disk 6 is seated on its seat 5 in the partition 4. In the preferred embodiment of my invention the nipple 15 is connected 10 to the intake manifold of an internal combustion engine of a self propelled vehicle and due to the fact that the admission of large quantities of air into said intake manifold of a motor would cause the motor to stall 15 due to the fact that air is non-combustible it is necessary to place the mixing valve on the intake manifold and connecting thereto. This is designed to permit the restricted or unlimited quantities of air to pass into the 20 motor by unseating the valve 6 which is automatically drawn from its seat as the air is drawn in through opening 17 at atmospheric pressure from any suitable source. Valve 11 automatically unseats with the unseating of valve 6, which permits the gasoline to flow through pipe 14, the quantity of which is manually adjusted through the adjusting screw or valve 13. This operation 25 permits gasoline and air to be mixed in proper proportions and to enter the motor which causes the motor to revolve more rapidly rather than stall, due to the additional amount of fuel which is permitted to be drawn into the motor. The constantly open 35 by-pass 16 is provided to permit a small amount of air to pass through the pipe 17 without unseating the valve 6. Should the slight leak mentioned above open the valve 6, the high vacuum created when the motor is idling would permit too much gasoline to 40 pass through the pipe 14 and would result in making a too rich mixture causing the motor to stall or choke.

It will now be apparent that I have devised a novel and useful valve which embodies the features of advantages enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and 50 described a preferred embodiment thereof which will give in practice satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

I claim:

1. In a device of the character stated, a

casing, a closure for its upper end, an elbow in said closure, a manually operated valve 60 for said elbow, a valve seat in said elbow, a needle valve seat in the lower end of said elbow, a valve seat within said casing, an automatic disc valve for said latter seat, a needle valve on the upper portion of said 65 disc valve, and seating in the lower end of said elbow, a secondary inlet to said mixing chamber formed above said disc valve, a spring for constantly pressing said disc valve against its seat, and a constantly open 70 by-pass leading from said mixing chamber to the outlet from said casing.

2. In a device of the character stated, a casing, a closure for its upper end, an inlet conduit passing through said closure, a valve 75 seat in said inlet conduit, a manually operated valve located above said seat, a valve seat in the lower end of said conduit, a chamber in said conduit between said valve seats, an automatic valve located in about the cen- 80 tral part of said casing, a seat therefor, a spring exerting tension on said valve and normally pressing the same against its seat, a needle valve carried by said valve and adapted to engage the seat at the bottom of 85 said inlet conduit, a secondary inlet pipe leading into the mixing chamber formed above said centrally disposed disc valve, and a constantly open by-pass leading from said mixing chamber to the outlet from said cas- 90 ing.

3. In a device of the character stated, a casing, a closure for its upper end, an inlet conduit passing through said closure, a valve 95 seat in said inlet conduit, a manually operated valve located above said seat, a needle valve seat in the lower end of said conduit, an automatic valve located in about the central part of said casing, a transverse partition located at about the central portion of 100 said casing and having a valve seat for said automatic valve therein, a spring bearing on the underside of said automatic valve and normally pressing the same against its seat, a needle valve carried by said automatic 105 valve and adapted to seat in the bottom of said inlet conduit, a second inlet pipe leading into said mixing chamber at a point above said centrally disposed automatic valve, and a constantly open by-pass adja- 110 cent said disc valve, and leading from said mixing chamber to the outlet from said casing.

In testimony whereof I affix my signature.

EVERETT R. SLAGLE.