Dec. 24, 1935. B. WHEELER 2,025,626

VACUUM REGULATOR

Filed Oct. 2, 1934

Fig. 1.

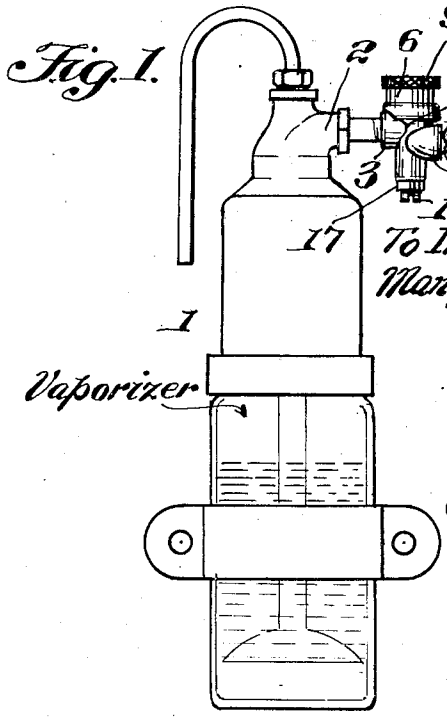


Fig. 2.

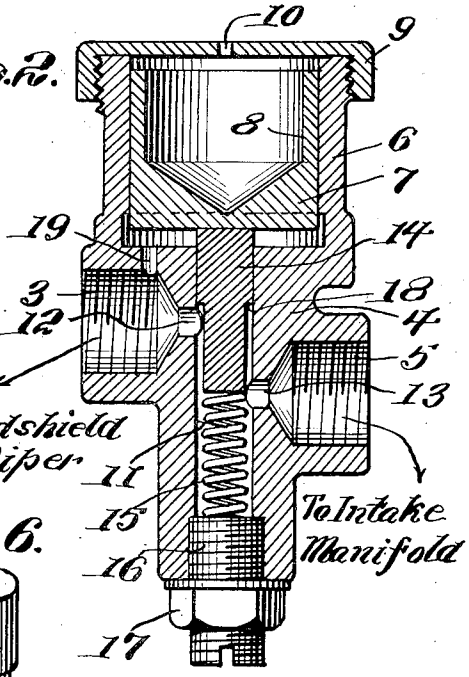


Fig. 6.

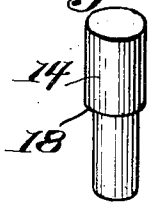


Fig. 5.

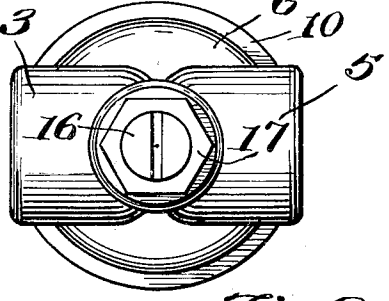


Fig. 3.

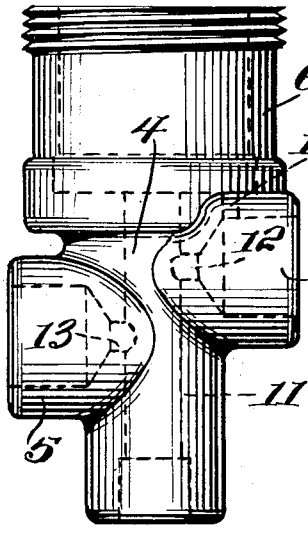


Fig. 4.

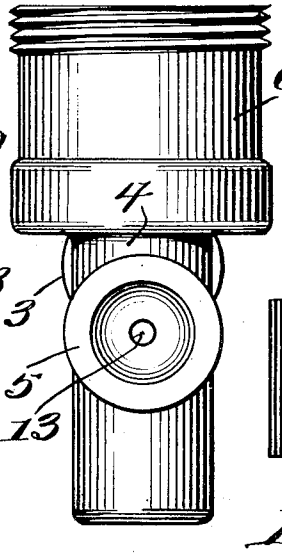


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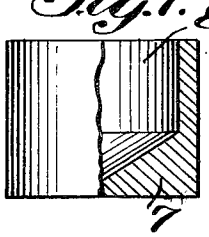
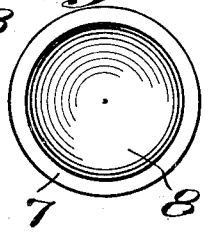


Fig. 8.



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VACUUM REGULATOR

Brian Wheeler, Erie, Pa., assignor to William J. Troutman, Butler, Pa.

Application October 2, 1934, Serial No. 746,616

1 Claim. (Cl. 137—153)

This invention is a device to regulate the action of an implement which is operated by suction or the formation of a vacuum, as, for instance, the windshield wiper of an automobile operated by suction from the intake manifold of the engine. The invention is illustrated in the accompanying drawing and consists in certain novel features which will be hereinafter first fully described and then more particularly defined in the appended claim.

In the drawing:

Figure 1 is an elevation of the regulator connected to the vaporizer.

Figure 2 is an enlarged central section through the regulator.

Figure 3 is a side elevation of the regulator.

Figure 4 is an end elevation of the same.

Figure 5 is a bottom plan view.

Figure 6 is a detail perspective of the valve.

Figure 7 is a detail partly in elevation and partly in section of the piston.

Figure 8 is a plan view of the piston.

The vaporizer 1 may be of any approved construction, its outlet 2 being connected with a nipple 3 on one side of the regulator body 4 on the opposite side of which is a nipple 5 connected with the intake manifold of the engine. With this arrangement vapor is drawn into the intake manifold to pass thence into the engine cylinders, ultimately effecting an economy in lubrication and promoting combustion and engine efficiency.

The body 4 has its upper end formed into a cylinder 6 within which is disposed a cup-like piston 7 having a chamber 8 in its upper end approximately coextensive with the piston body. The top of the cylinder is fitted with a removable cover 9 having a vent opening 10 at its center. The lower end portion of the regulator body is elongated relative to the upper end portion and has a central bore 11 extending therethrough from the cylinder to its end and ports 12, 13 establish communication between the bore and the nipples 3 and 5 respectively, the nipple 5 being below the nipple 3, as shown. A piston valve 14 is slidably mounted in the bore 11 and is held up to and against the piston 7 by an expansion spring 15 in the lower end of the bore, said spring resting on a plug 16 upon which is a lock nut 17 accessible from the exterior of the body to hold the adjustment of the spring when turned home against the body. The upper end portion of the piston valve fits closely in the bore 11 but the lower portion is reduced in diameter, the annular shoulder 18 thus formed being normally just above the port 12 and the lower extremity of the valve being in the vicinity of the port 13, an annular space or chamber between the lower portion of the piston and the wall of the bore being constantly open to said port 13. A by-pass port 19 in the interior of the body 6 connects the lower end of the cylinder 6 with the bore of the nipple 3 so that trapping of fluid pressure below the piston will be avoided.

Normally the spring 15 holds the valve in the position shown in Figure 2 and the suction from the intake manifold will be effective to operate the implement connected with the nipple 3. Should the engine slow down and the suction, consequently, increase so as to overcome the spring 15, the valve will be drawn downwardly to partly or wholly cover the port 12 and thereby prevent excessive speed in the implement. When the engine resumes its normal speed, the spring will return the valve to normal position and the device will thus operate to automatically maintain regular action of the implement.

Having described my invention, what I claim is:

A device for the purpose set forth comprising a valve body having a bore therein, nipples on the body one above the other, the lower nipple being connected with a source of suction and the upper nipple connected with a driven implement, and both nipples being in communication with the bore, a piston valve slidably mounted in the bore and having a uniformly reduced portion forming an annular space between the valve and wall of said bore exposed to the suction to cut off the upper nipple upon increase of suction, an expansion spring in the bore acting upon the valve in opposition to the suction, an adjusting plug threaded into said bore, a lock nut on the plug accessible from the exterior of the body, a cylinder on the upper end of the body, a piston in the cylinder in contact with the upper end of the valve, and a by-pass in the body connecting the cylinder with the upper nipple.

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