

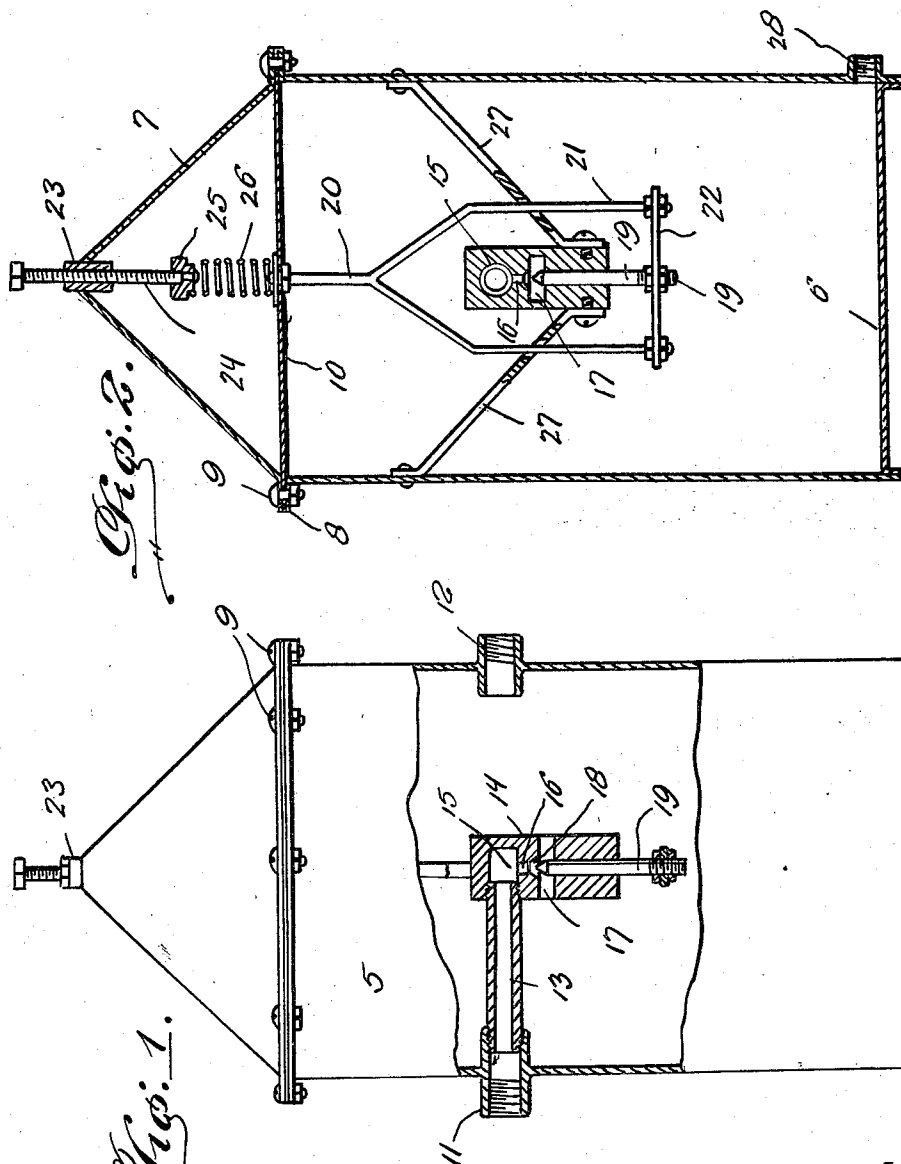
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GAS PRESSURE REGULATOR

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GAS-PRESSURE REGULATOR.

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This invention relates to pressure regulating devices and has for its primary object to provide a means whereby fuel gas may be fed to an engine at uniform pressure regardless of the fluctuation of the pressure from the main gas supply in order to permit the engine to be run in a smooth manner at all times.

An additional object of the invention is to provide a regulator of the aforementioned character wherein the pressure being discharged to the engine may be regulated at will.

A further and important object is to substantially improve and simplify over regulators of this general character that has heretofore been employed for the same general purpose.

Other objects will become apparent as the nature of the invention is better understood, the same comprising the novel form, combination, and arrangement of parts hereinafter more fully described, shown in the accompanying drawing and claimed.

In the drawing wherein like reference characters indicate corresponding parts in both of the views:

Figure 1 is a view partly in side elevation and partly in cross section of a gas regulator constructed in accordance with the present invention, and

Figure 2 is a detail vertical section taken substantially at right angle with respect to Figure 1.

Now having particular reference to the drawing my novel gas pressure regulator constitutes the provision of a cylindrical tank 5 of any suitable capacity that is provided with a bottom plane wall 6 and a top inverted conical wall 7, the upper end of the tank being flanged as at 8 as is also the enlarged end of the conical wall 7 in order to permit said wall to be secured on the tank as indicated by the reference character 9, and also to permit of the arrangement of a horizontal diaphragm 10 of circular shape between the tank and said wall, the perimeter thereof being disposed between the flanges and secured by said interconnected bolts, as more clearly disclosed in Figure 2.

The tank 5 is formed or provided at a suitable point with an inlet nipple 11 and a diametrically opposed point with an exhaust nipple 12 there being arranged within the end of the nipple within the tank a horizontal pipe 13 to the inner end of which

is connected a valve block 14 that is formed at its upper end with a valve receiving chamber 15 in communication with the pipe 13 and from which depends a vertical passage 16 that is in communication with a transverse passage 17 that opens at the opposite sides of the block as clearly disclosed in Figure 1. The lower end of the vertical passage is tapered for providing a valve seat 18 for receiving the upper pointed end of a needle valve 19 mounted for sliding movement in a bore at the lower end of the block for cutting off the passage of the gas when said needle valve is raised.

Rigidly attached to the diaphragm 10 at the center thereof and depending therefrom is a valve control rod 20 that is yoked at its lower end as at 21 for straddling the valve block to permit the free vertical movement of the same in opposite directions under the influence of said diaphragm. The legs of the yoke are interconnected by a cross bar 22 that is in turn connected to the needle valve 19 for controlling the opening and closing of the valve when said rod is actuated by reason of the diaphragm.

Threaded within a vertical sleeve 23 arranged within the apex of the conical top wall 7 of the tank is a bolt 24 upon the lower end of which is mounted a shouldered nut 25 and between which and the diaphragm is arranged an expansible coil spring 26, the tension of which may be regulated by reason of said bolt 24.

The valve block 14 is maintained in rigid position within the tank 5 by reason of arms 27-27 connected at their opposite ends to the tank and to the block respectively. The tank 5 may be and preferably is equipped at its lower end with a drain port 28 that is normally closed by a plug or other suitable means, not shown.

In actual use, the nipple 11 of the tank has communication with a source of gas supply, while the nipple 12 is in communication with a gas engine and it will be readily apparent that by so adjusting the spring pressure controlling bolt 24, gas up to a certain pressure will be permitted to enter the tank 5. However, should the pressure ever increase over the predetermined degree the diaphragm 12 will be forced outwardly to overcome the tension of the spring 26 and consequently the needle valve 19 will move to closed position for preventing further inlet of the gas into the tank.

As soon as the pressure drops, the needle valve will open and consequently again permit the gas to pass into the tank.

It will thus be seen that I have provided
5 a highly novel, simple and efficient form of gas regulator that is well adapted for all the purposes heretofore designated even though I have herein shown and described the invention as consisting of certain detail structural elements, it is nevertheless to be understood that minor changes may be made therein without effecting the spirit and scope of the appended claim.

Having thus described the invention, what
15 I claim as new and desire to secure by Letters Patent is:—

In a gas pressure regulator, a gas receiving tank provided with an inlet and an exhaust, a valve block, brackets for rigidly
20 supporting said valve block within the central portion of the tank, said valve block being provided with a gas receiving chamber, a pipe affording communication between the inlet and said chamber, said block being
25 provided with a transverse outlet which affords communication with the interior of

the tank, the block being further provided with a vertical passage which affords communication between the gas receiving chamber and said outlet passage, a vertically slidable needle valve, the upper end thereof adapted to close the vertical passage and cut off the supply of gas from the chamber to said outlet in the valve block, a pressure actuated diaphragm mounted in the
35 upper portion of the tank, a connection between the diaphragm and said needle valve, said connection comprising a rod secured at its upper end to the diaphragm, a yoke formed on the lower end of the rod, the arms
40 of said yoke being disposed on the opposite sides of the valve block and extending below the same, a cross bar interconnecting the legs of the yoke, the lower end of the needle valve being secured to the intermediate portion of the cross bar, and adjustable tension means for regulating the
45 actuation of the diaphragm under the pressure of the gas within the tank.

In testimony whereof I affix my signature.

CHARLES V. EWAN.