

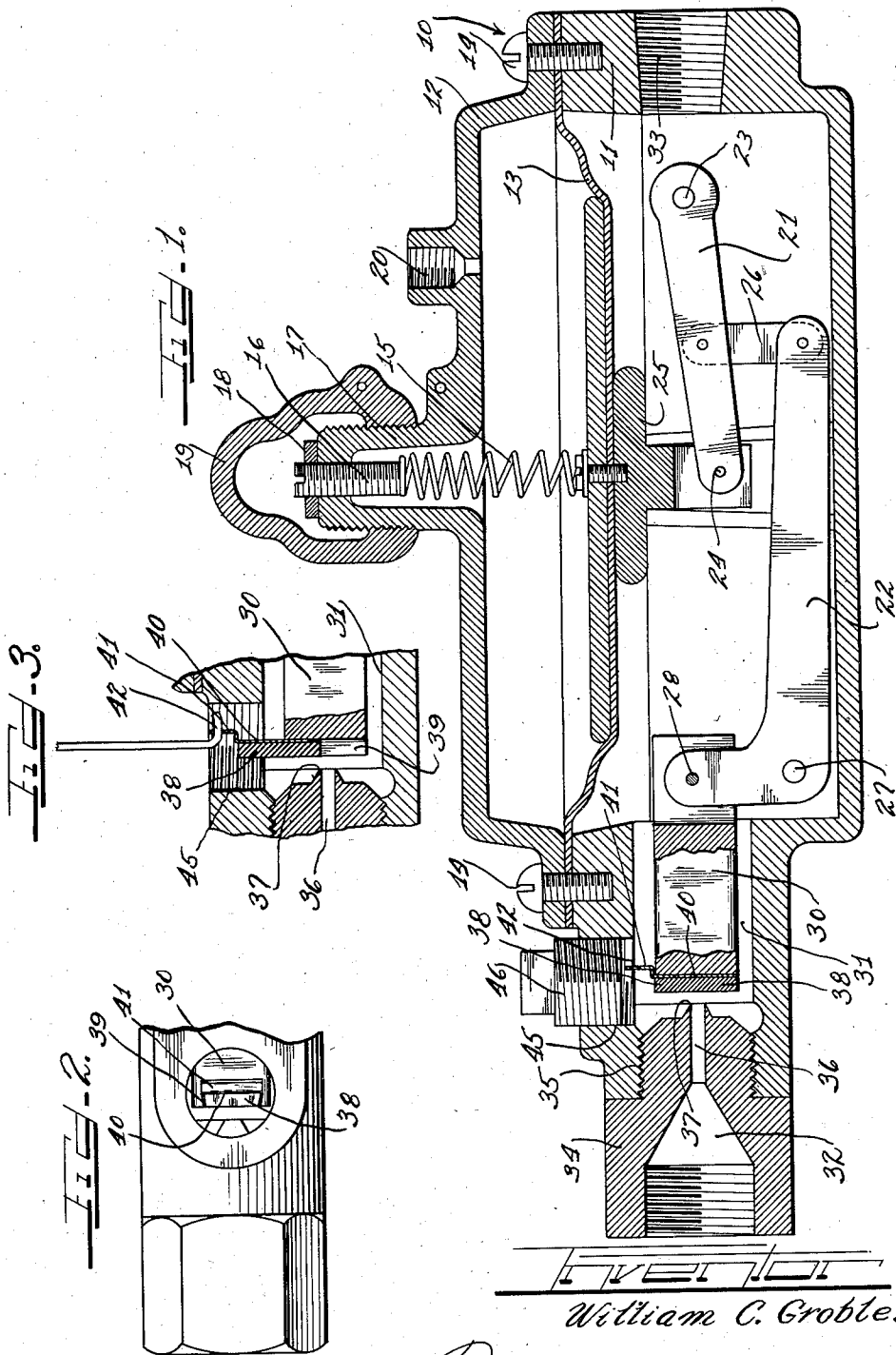
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W. C. GROBLE

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FLUID PRESSURE REGULATOR

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William C. Groble.

Charles Groble Atty.

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FLUID PRESSURE REGULATOR

William C. Groble, Anderson, Ind., assignor to
Mueller Co., Anderson, Ind., a corporation of
Illinois

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This invention relates to fluid pressure valves and more particularly to a fluid pressure regulator.

An object of this invention is to provide an improved gas pressure regulator with a more readily replaceable valve element.

Another object of this invention is to provide a gas regulator which may be installed either horizontally or vertically in a gas line and which is provided with means whereby the valve disc can be readily removed and replaced without disturbing the valve or any other part of the regulator.

In accordance with the general features of this invention there is provided a fluid pressure regulator especially adapted for use in a gas line and which comprises a casing including inlet and outlet passages having valve means associated with one of the passages to control the flow of gas therethrough and which valve includes a detachable disc which is laterally removable from the casing through a lateral opening in communication therewith, which opening is normally closed by a removable plug.

Another feature of the invention relates to the provision of novel means in the valve of the gas pressure regulator for slidably carrying the removable valve disc whereby the disc may be transversely displaced from the valve when it is desired to remove and replace the disc.

Other objects and features of this invention will more fully appear from the following detailed description taken in connection with the accompanying drawing which illustrates a single embodiment thereof, and in which

Figure 1 is a cross-sectional view taken through a gas pressure regulator embodying the features of this invention.

Figure 2 is a fragmentary plan view of an end of the regulator looking through the opening through which the valve disc is adapted to be removed.

Figure 3 is an enlarged fragmentary sectional view similar to a portion of Figure 1 but showing the valve disc in the process of being removed from the valve through the lateral opening provided in accordance with the features of this invention.

The reference character 10 designates generally a gas pressure regulator casing comprising a bottom 11 and a top or cover 12 between which is clamped a weighted diaphragm 13. The parts are secured together by bolts 14 in the usual way. The weighted diaphragm 13 is spring urged by means of a spring 15, one end of which abuts the weighted diaphragm 13 and the other end of

which abuts an adjustable screw stud 16 threaded in an extension 17 on the cover 12. This adjustable stud or screw 16 has threaded on it a lock nut 18 normally enclosed in a cap 19 threaded on the extension 17.

Also it should be noted that the upper part of the casing 10 is provided with a vent opening 20 formed in the cover part 12.

Located in the lower part 11 in the casing 10 is a series of levers including a lever 21 and a bell crank lever 22. The lever 21 is pivoted at 23 to the casing part 11 and has one end pivotally connected at 24 to a boss 25 secured to the underside of the weighted diaphragm 13.

Pivotally connected to the lever 21 between its ends is an intermediate link 26, one end of which is pivoted to lever 21 and the other end of which is pivoted to a free end of bell crank lever 22. Bell crank lever 22 is also pivotally carried at 27 on the casing 11.

The other end of the bell crank lever 22 is pivotally connected at 28 to a reciprocatory valve member 30 which is adapted to be oscillated into and out of closed position in a passage 31.

The passage 31 is disposed in communication with an inlet passage 32 which is threaded to receive one end of a pipe. Diametrically opposite the inlet passage 32 is an outlet passage 33 formed in the casing part 11 and which is also adapted to receive an end of a gas pipe. It should be noted at this time that the construction of the gas regulator illustrated in the accompanying drawing is such that the regulator may be mounted with equal advantage in either a horizontal or a vertical position in a gas pipe line.

The inlet passage 32 is formed in a nipple 34 threaded at 35 into one end of the casing part 11. The threaded nipple 34 has a reduced passage 36 adapted to establish communication between passages 31 and 32. This reduced passage 36 terminates at 37 in a valve seat cooperable with a valve element or head 38 detachably carried in a free end of the valve 30.

At this time it should be noted that my invention is concerned with the valve element 38 and not per se with any other structure of the gas regulator previously described. As a matter of fact, any usual or suitable gas regulator mechanism may be employed for operating the valve 30, and this valve 30 may be of any conventional or desired shape as long as it embodies the features of the invention which I will now proceed to describe in detail.

The valve element 38 is dovetailed in a slot 39 formed in an end of the valve 30 as

best shown in Figures 2 and 3. This valve element 38 may be made of any suitable material such, for example, as fiber, and is carried in a channeled frame 40 which has formed integral with it laterally offset handle means 41. This handle means 41 may be apertured at 42 to receive the end of a wire or other hook for raising or lowering the valve element 38 or, in other words, for oscillating the valve element in the end of the valve 30. The channeled metal element 40 is of a V-shaped cross-section so that the fiber valve element 30 is disposed inside the same and is movable therewith.

In order to provide access to the valve element 38 without necessitating any disconnection of the regulator from the associated pipe line, the casing part 11 is provided with a threaded opening 45 disposed laterally opposite the valve element 38. This threaded opening 45 is normally filled by a removable pipe plug or nipple 46.

Whenever it is desired to replace the fiber valve element 38, such replacement may be readily effected by removing the plug 46 and by then pulling the valve element 38 out of the dovetailed slot 39. Thereafter a new valve element may be inserted by simply pushing it downwardly in the dovetail slot 39. It will of course be appreciated that the inward movement of the element 38 will be limited by the offset handle means 41 which will come into contact with the top side of the valve 30 as is evident from Figure 1.

This replacement of the valve does not in any way necessitate any disturbance of any of the other parts of the regulator, nor does it require that the regulator be in any way disconnected from the pipe line. All that is necessary to be done in addition to what has been described hereinbefore is to turn off the gas prior to the removal of the plug 46.

Now I desire it understood that although I have illustrated and described in detail the preferred embodiment of this invention, the invention is not to be thus limited, but only so far as

defined by the scope and spirit of the appended claims.

I claim as my invention:

1. In a fluid pressure regulator valve, a removable valve head slidably dovetailed in the valve and including offset handle means projecting outwardly beyond the valve by which the element may be transversely slid into and out of the valve, said offset handle means serving as a stop for limiting the inward sliding of the valve element in the valve so as to align the element therewith.

2. In a pressure regulator for a fluid line, a casing having inlet and outlet passages, a valve associated with one of said passages to control the flow of fluid therethrough, said valve having a slot therein in the gate end thereof, a gate member slidably insertable in said slot, an offset apertured handle on said gate member projecting freely beyond said valve, the offset in said handle serving as a stop to limit the inward movement of said member, said casing having an opening therein adjacent said member, and a removable closure associated with said opening, whereby when said closure is removed a suitable instrument may be inserted through said opening and engaged in the aperture in said handle for the removal and replacement of said gate member alone.

3. A valve construction, including a valve seat, a valve member movable relatively to said seat, said valve member having a dovetail slot therein in alignment with said seat, and a removable valve head shaped for insertion in said dovetail slot, said valve head carrying a handle projecting beyond said valve member and having an offset therein to limit the insertion of said head in said slot, whereby said head may be removed and replaced and when inserted in said valve member becomes automatically aligned with said valve seat.

WILLIAM C. GROBLE.