

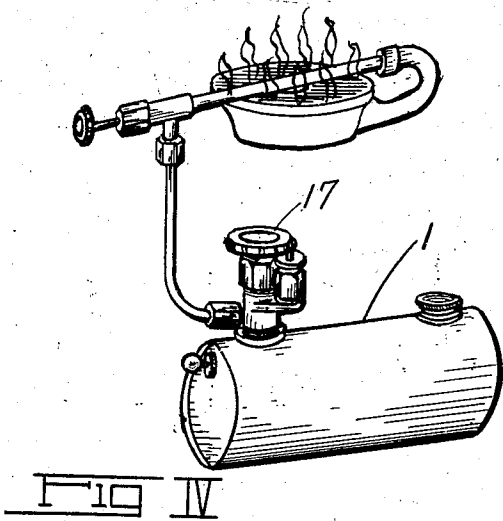
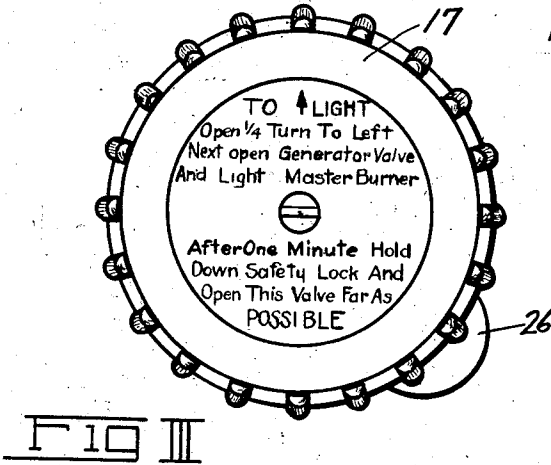
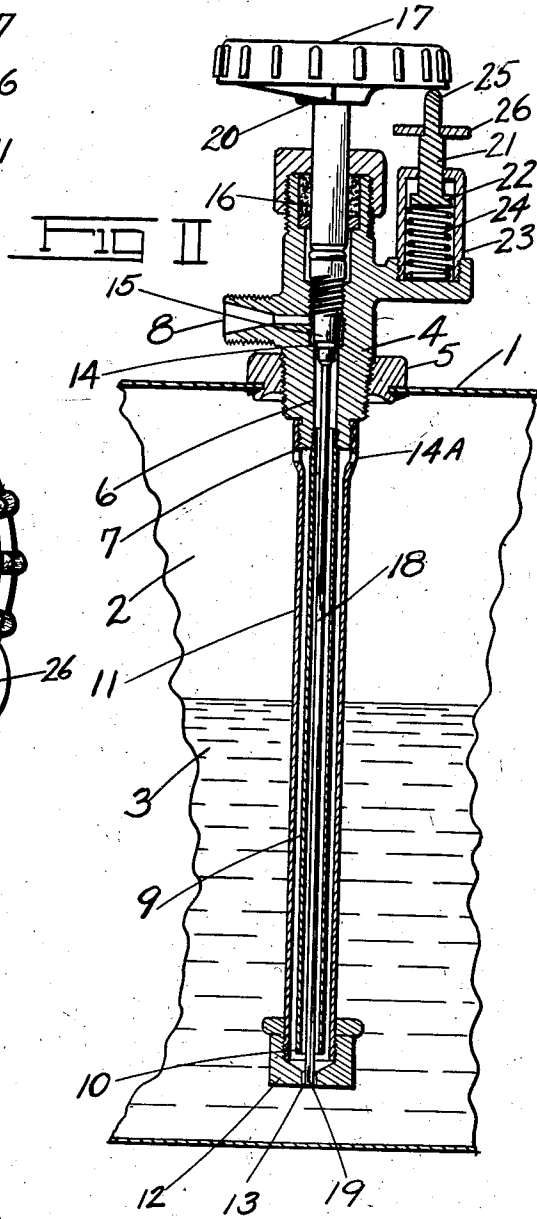
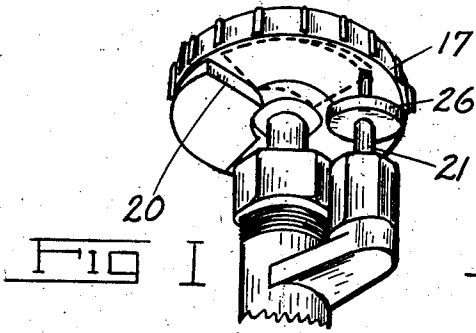
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VALVE CONTROLLING DEVICE

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VALVE CONTROLLING DEVICE

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4 Claims. (Cl. 158—81)

This invention relates to a valve controlling device for controlling the condition of a valve within a supply line to insure a definite ratio of fluid or fluids passing through the line.

5 It is particularly designed to be used in connection with fuel burning devices in which air and liquid are first admitted to the line and thereafter liquid only is permitted to flow into the line. The invention is specifically illustrated in
10 connection with the claim of the device in which a fuel tank or font is provided to receive liquid hydrocarbon fuel under air pressure in contact therewith and in which there is a supply conduit leading to a burner with means to initially admit
15 some of the air to the line to be enriched by a proper amount of liquid so that the burner can be instantly lighted without preheating and my invention particularly has to do with means whereby the correct amount of liquid can be
20 flowed into the pipe to mix with the air for the initial lighting of the burner, after which the air is cut off and liquid only flows to the vaporizing generator between the tank and the burner. The novelty of the invention will be understood with
25 reference to the following descriptions in connection with the accompanying drawing, in which:

Figure 1 is a perspective view of my invention.

30 Figure 2 is a vertical, longitudinal, sectional view through a portion of a tank and through air and liquid tubes the valve being shown in elevation and the stop or detent of my invention being shown.

35 Figure 3 is a top plan view of disc for operating the valve, and

Figure 4 is a view showing fuel burning assembly to which my invention applies.

Referring now to the drawing by numbers of reference, (1) designates font or tank which it is
40 to be understood is provided with filler cap and with pump for creating air pressure in space (2) on top of liquid (3). A valve body 4 is screwed into collar 5 carried by the tank and it has a through port 6 with an inlet 7 and an outlet 8.
45 Fastened to the inlet end of the valve body is an elongated tube 9 extending down into the tank below the normal liquid level thereof. This tube has a free open end 10 and is surrounded by a larger pipe 11 which is secured to the lower end
50 of the valve body and extends down below the lower end 10 of tube 9. The lower end of tube 11 is provided with a cap or tip 12 having a port 13 of definite size therethrough. The upper end of pipe 11 is provided with openings 14a so that
55 air can flow under certain conditions from the

space 2 down through pipe 11 up through pipe 9 and then through the outlet 8 of the valve body 4. The valve body 4 is provided with valve seat 14 which is engageable by a valve on a threaded stem 15 which extends through a stuffing box 5
16. The stem is provided with a hand wheel 17 by means of which the valve may be seated and unseated. Projecting from the stem of the valve is an elongated extension 18 the lower end of which constitutes a regulating valve to control 10
the amount of liquid passing into tubes 9 and 11. This regulating valve 19 is of less diameter than the port 13 so that when it is in the opening 13 said opening will not be closed but will still
15 permit liquid to pass up to one or more of the tubes or pipes. When the valve 15 is slightly unseated the regulating valve 19 will still be in the opening 13. Therefore, air can pass from space 2 through openings 14a down through the tube
20 11 up through tube 9 out to the outlet 8 to a vaporizing generator associated with the burner and while the air is thus flowing a small quantity of liquid will be flowing into the tubes 9 and 11 or into at least one of them to combine with
25 the air.

However, when the valve (15) is unseated far enough the regulating valve (19) will be withdrawn from the opening (13) to permit liquid to flood tubes (9) and (11) and thereby cut off
30 supply of air so thereafter only liquid will flow. With such a device the initial position of the valve will permit a flow of enriched air to the burner. This mixture will be instantly combustible by applying a match flame thereto. When the generator becomes hot enough to va-
35 porize the liquid fuel the valve (15) will be moved to full open position so that the second condition takes place, that is the regulating valve (19) is out of the opening (13) and the liquid entering the two tubes will cut off air escape.
40

Such devices were known prior to my invention so I make no claim to the particular device thus far described. As heretofore maintained my invention relates to means of determining position of valve with relation to its seat and position of hydrodynamic regulator with respect to
45 interstice (13) in tip (12).

By reference to Figures 1 and 2 it will be observed that the hand wheel or controller (17) is provided with a shoulder (20) which is adapted
50 to engage a spring actuated stop or detent (21) which has a head (22) at one end movable in an offset guide (23), the guide having an expansion spring (24) for urging detent or stop (21) in
55 the path of the shoulder (20) when the controller

or disc (17) is rotated. The shoulder bears such relation to the stop or detent when the valve (15) is seated that the controller or disc (17) can be turned about 90 degrees before the shoulder (20) contacts with the end (25) of the stop or detent. In this position the valve (15) will be sufficiently unseated to permit air from the space (2) to pass out into the line connected to the vaporizing generator and burner but the regulating valve will not have been withdrawn from the tip orifice (13). Therefore, the parts are arranged to give the best mixture for combustion. After the burner has burned long enough to heat the generator so that it will vaporize the liquid hydrocarbon fuel it is desirable that air be shut off so to this end the operator presses down on the disc or member (26) of the detent or stop (25) against action of spring to move stop out of path of shoulder (20). Consequently, the valve stem can be rotated to unseat the valve the fullest amount, withdrawing the regulating valve (19) from orifice (13) and permitting tube or tubes to become flooded to shut off the air, so thereafter only liquid hydrocarbon fuel will be admitted to the vaporizing chamber.

Without a device for insuring the position of the regulating valve during the initial position of valve (15) a careless operator could very readily open the valve too far and cause flooding of the tubes (9) and (11) before the vaporizing chamber was hot enough to vaporize the liquid hydrocarbon fuel. So in actual practice flooding of the supply pipes or tubes is substantially eliminated.

While I have shown one form of valve controlling mechanism in connection with my invention I do not wish to be limited to the exact data of construction shown, but reserve the right to make such changes in form, proportion and minor details of construction as properly come within the scope of the appended claims.

What I claim is:

1. A device of the class described comprising a valve body, a fuel supply tube communicating with the valve body, an inlet orifice member for supplying liquid fuel to the supply tube, an air supply pipe communicating with the liquid supply tube above the inlet orifice, a valve in the valve body, said valve having a manually operable seating and unseating element, means at the lower end of said element for restricting and enlarging the inlet orifice, and stop means for limiting the unseating movement of the valve to a degree less than that required to cause the first means to enlarge the inlet orifice, said stop means being releasable so that further unseating movement of the said element will cause the first

means to enlarge the effective port area of the inlet orifice.

2. In a device of the class described a valve body, a fuel supply tube communicating with the valve body, a reduced inlet orifice member near the lower end of the fuel supply tube, an air supply pipe communicating with the liquid supply tube above the inlet orifice, a valve in the valve body, said valve having a manually rotatable actuating member and having a reduced lower end of less diameter than the inlet orifice for restricting the inlet to the supply tube, an offset member carried by the valve body and a spring pressed stop means carried by the offset member to be engaged by the actuating member upon rotation of the actuating member, for limiting the unseating movement of the valve to maintain the inlet orifice to the supply tube restricted.

3. In a device of the class described a valve body, a fuel supply tube communicating with the valve body, a reduced inlet orifice member near the lower end of the fuel supply tube, an air supply pipe communicating with the liquid supply tube above the inlet orifice, a valve in the valve body, said valve having a manually rotatable actuating member and having a reduced lower end of less diameter than the inlet orifice for restricting the inlet to the supply tube, an offset member carried by the valve body and a spring pressed stop means carried by the offset member to be engaged by the actuating member upon rotation of the actuating member for limiting the unseating movement of the valve to maintain the inlet orifice to the supply tube restricted, said stop means being releasable, whereupon further movement of the actuator will impart sufficient movement to the reduced end to enlarge the inlet to the supply tube.

4. A device of the class described comprising a valve body, a fuel supply tube communicating with the valve body, an inlet orifice member near the lower end of the supply tube of less diameter than the liquid fuel supply tube, a rotatable stem in the valve body having a valve to engage the seat in the valve body, said stem extending from the valve and having a part projectable into the inlet orifice of the supply tube, said part being of less diameter than the inlet orifice, a hand wheel for rotating the stem to seat and unseat the valve, a projection on the hand wheel and an offset stop means carried by the valve body for engaging the projection on the hand wheel to limit its rotating movement so that the valve will be unseated while the end of the stem is in the inlet orifice.

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