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F. H. HARRIMAN.

PRESSURE SAFETY DEVICE FOR ACETYLENE GAS GENERATORS.

(Application filed July 5, 1899.)

(No Model.)

Fig. 1.

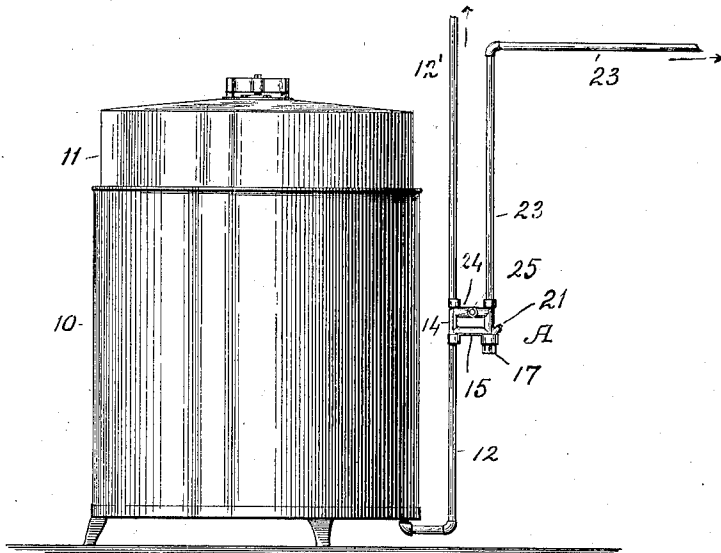
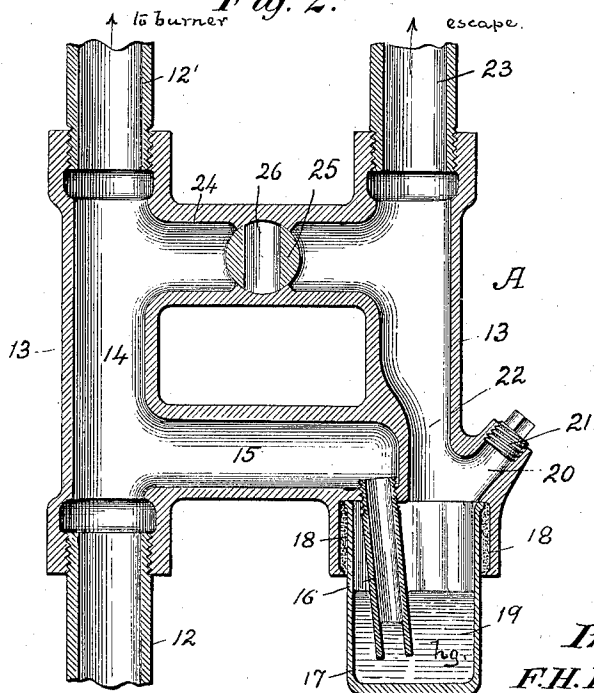


Fig. 2.



Witnesses:

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PRESSURE SAFETY DEVICE FOR ACETYLENE-GAS GENERATORS.

SPECIFICATION forming part of Letters Patent No. 655,623, dated August 7, 1900.

Application filed July 5, 1899. Serial No. 722,803. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. HARRIMAN, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Pressure Safety-Valves, of which the following is a specification.

This invention relates to safety-valves, and more especially to the kind employed in connection with gas; and it has for one object the provision of a device of the class mentioned in which the gas is caused to pass through a liquid contained in a chamber, from which it may be conducted into the open air by a suitable pipe.

Another object of the invention is to provide means whereby the gas may be withdrawn from the pressure-pipe or allowed to escape into the open air without being obliged to pass through said liquid, as will be hereinafter described and as illustrated in the accompanying drawings, in which—

Figure 1 represents a gas-holder of ordinary construction having my improved valve applied to the main pipe thereof, and Fig. 2 represents a central section of the valve and the pipes connected therewith.

Similar characters designate like parts in both figures of the drawings.

In the drawings, 10 designates a tank containing water, and 11 the gas-reservoir, closed at the top and adapted for storing gas, which may be conducted therefrom by the main supply-pipe 12, the upper branch 12' of which leads to the burners or other devices where it is used.

The safety-valve forming the subject of my invention is designated in a general way by A and consists, substantially, of a casing 13, having a passage 14, through which the gas may pass from the pipe 12 to the branch 12' in a free and unobstructed manner. A passage 15 connects with the passage 14 and has at its closed end a pipe 16, screw-threaded or otherwise mounted therein and projecting into a chamber 17, with its end near the bottom thereof, said chamber being preferably made of glass and secured in the casing 13 by means of cement, plaster-of-paris, or other analogous substance 18 in an air-tight

manner. The chamber 17 contains a liquid 19, which preferably consists of mercury, it being well adapted to withstand pressure with a comparatively small amount of bulk and having non-evaporative qualities, and the bulk of such liquid may be increased through an aperture 20, provided in the side of the casing 13 and adapted to be closed by a plug 21, as clearly shown in Fig. 2. As is obvious, however, other liquids—as, for instance, oils—may be substituted for mercury, and the invention is not limited to any particular substance for accomplishing the result described. The upper end of the chamber 17 is open and in direct and unobstructed communication with a passage 22, by which the gas may be conducted to a pipe 23, leading to the open air. Hence it will be understood that if the pressure of gas within the supply-pipe 12 rises beyond a predetermined limit the gas will pass through the passage 15 and pipe 16, thus forcing the liquid 19 out of the same, and will rise through the liquid in the chamber 17, when it will escape through the passage 22 and pipe 23. It is also evident that the limit of pressure in the supply-pipe 12 may be varied according to the amount of liquid contained in the chamber 17, since by the introduction of more liquid into said chamber a greater resistance is offered to the escape of the air than before, and vice versa.

As it has been found in practice that it is often desirable completely to remove the gas contained in the gasometer, and whereas it is inconvenient to withdraw the liquid from the chamber 17 sufficiently to permit a free escape of the gas from the pipe 12 and through the passage 22 and pipe 23, I provide a passage 24 for connecting the supply-pipe 12 directly with the discharge-pipe 23 and close said passage 24 by means shown in the drawings, as a plug-valve having a central aperture 26, which by turning the plug may be brought into such position as to afford a free passage of the gas from the pipe 12 to the pipe 23, and which plug may, on the other hand, be turned—as, for instance, as shown in Fig. 2—tightly to close said passage 24, thereby throwing the full pressure of the gas contained within the pipe 12 onto the liquid 19 in the chamber 17, which in the manner

above described will form a seal for the pipe 16 under a variable pressure governed by the amount of said liquid.

The invention is not limited to the precise construction, as many variations could be made without departing therefrom.

Having thus described my invention, I claim—

1. In a device of the class specified, the combination, with means for supplying gas under pressure, of a casing connected with such means and equipped with two sets of passages, one set located at an angle to the other set; an outlet connection leading from one of the passages of one set in said casing to the burner; a waste connection leading from the other passage of said set to the open air; a receptacle containing liquid; and a pipe leading from one of the passages of the other set to and below the liquid in the receptacle, whereby if the gas exceeds a certain pressure it will pass through the liquid and enter said connection.

2. The combination, with a gas-reservoir, of a pipe leading therefrom; a casing connected with said pipe and having a passage in line therewith, a duct parallel to said passage, a valved duct connecting said parallel passage and duct, and another duct having a closed end; a pipe leading from the last-named duct; a receptacle containing liquid into which said pipe enters; and a pipe leading to the open air and connected with one of the parallel ducts.

3. The combination, with a gas-reservoir, of a pipe leading therefrom and passing up at one side of said reservoir; a casing having two vertical passages and upper and lower horizontal passages, the lower horizontal passage opening into one of the vertical passages and having a closed end adjacent to the other vertical passage; a valve in the upper horizontal passage; a pipe leading to the burners and

connected to one of the vertical passages; a pipe leading to the open air and in communication with the other vertical passage; a receptacle containing liquid, attached to the lower part of said casing; and a pipe leading from the lower horizontal passage, the end of said pipe entering the liquid in said receptacle.

4. The combination, with a gas-reservoir, of a pipe leading therefrom; an integral casing connected to said pipe, said casing having a vertical passage in line with said pipe at one side, and a vertical passage at the other side of its structure; outlet-pipes communicating with said vertical passages; upper and lower horizontal passages in said casing, said lower passage having a closed end; a plug-valve in the upper horizontal passage; a glass receptacle connected to the lower part of said casing and in communication with one of said vertical passages; and a pipe leading from the lower horizontal passage adjacent to the closed end thereof and entering the liquid in said receptacle.

5. A safety-valve consisting of an integral body having vertical passages located as described, and upper and lower horizontal passages, the lower horizontal passage communicating with one of the vertical passages and having a closed end adjacent to the other vertical passage; a plug-valve in the upper horizontal passage; a receptacle containing liquid, rigidly secured to the casing; a pipe leading from the lower horizontal passage, and the end of which dips below the liquid in said receptacle; a passage within said casing through which the receptacle may be filled with liquid; and a stopper for closing said passage.

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Witnesses:

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