

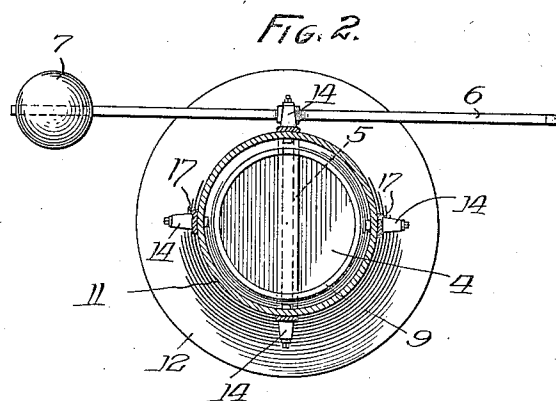
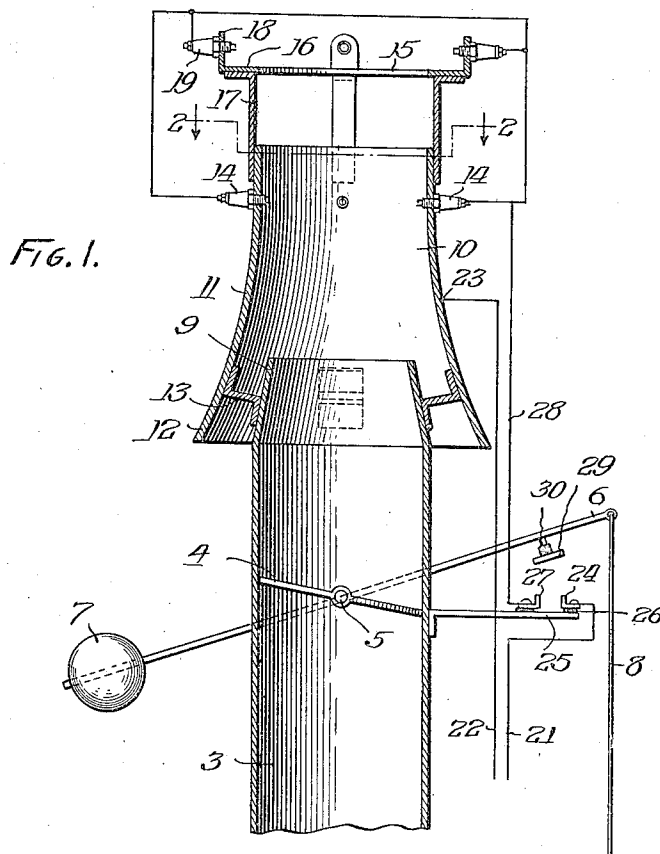
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F. H. WILLCOX

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GAS BLEEDER

Filed May 16, 1921



Witness:

Ed. C. Johnson

Inventor:

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By *William H. Hurdley* *Byron & Knight* Attys.

UNITED STATES PATENT OFFICE.

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GAS BLEEDER.

Application filed May 16, 1921. Serial No. 470,213.

To all whom it may concern:

Be it known that I, FREDERICK H. WILLCOX, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Gas Bleeders, of which the following is a specification.

This invention relates to a new and improved gas bleeder and more particularly to means associated with the bleeder adapted to ignite the gas discharged therefrom.

In certain industrial uses of gas, particularly, for example, in connection with blast furnace or similar gases, means are provided in connection with the gas lines whereby gas may be bled to the atmosphere when the gas pressure in the lines exceeds a predetermined limit. It is highly undesirable that the gas be allowed to escape adjacent workings where it may become ignited or where it may prove injurious to the workmen. It is customary to run the bleeder pipes up to a level of twenty or thirty feet above the ground and then discharge the excess gas to the atmosphere. In many cases, due to winds or other air currents, the gas may be swept down into the working rooms or shops and be a source of danger or discomfort. This has reference, of course, to relatively cold gas or gas at such a temperature that it does not spontaneously ignite when reaching the atmosphere.

It is an object of the present invention to provide means associated with a gas bleeder valve to ignite the gas discharged from the valve.

It is a further object to provide means adapted to intermix the gas with air in order that it may be more adequately consumed.

It is also an object to provide means whereby the ignition system is automatically thrown into operation upon the opening of the valve.

It is a still further object to provide means associated with the bleeder discharge whereby to provide a contact point for the flame and to prevent the flame from floating away from the discharge point.

Other and further objects will appear as the description proceeds.

Broadly, my invention comprises a mix-

ing chamber associated with the gas bleeder discharge nozzle and with spark plugs or similar ignition devices located toward the discharge end of the mixing chamber. It further includes a wire mesh support beyond the discharge opening and in the path of the gases, and additional ignition means located beyond the mesh. This mesh serves as the contact point for the flame.

I have illustrated a preferred embodiment in the accompanying drawings, in which—

Figure 1 is a somewhat diagrammatic sectional view illustrating my invention; and

Figure 2 is a section taken on line 2—2 of Figure 1.

As shown in the drawings, the gas bleeder pipe 3 is controlled by the valve 4 carried on shaft 5 and actuated by rod 6. The rod 6 carries the counterbalance 7 and has connected at its further end the actuating wire or cable 8. This cable 8 is connected to any automatic valve operating means (not shown). This means is old in the art and forms no part of the present invention and need not be further described other than to say that it operates to pull down upon the cable 8 and thus open the valve 4 whenever the gas pressure exceeds a predetermined limit. The bleeder pipe 3 is provided with the reduced discharge end 9 which opens into the mixing chamber 10. This chamber is formed by the member 11, the flaring skirts 12 of the member being connected to the portion 9 by means of brackets 13. The spark plugs 14 are located in the upper end of the member 11. The screen 15 carried in the frame 16 is supported above the upper end of the member 11 by brackets 17. Brackets 18 support spark plugs 19 beyond the screen.

An electrical circuit comprises the wires 21, 22, leading from a source of high tension current (not shown). The wire 22 is grounded to the member 11 at the point 23. The wire 21 is connected to the contact 24 supported on bracket 25 and separated therefrom by insulation 26. The contact 27 similarly is supported on the bracket 25. The wire 28 connects the contact 27 to the several spark plugs 14 and 18. Since these spark plugs have their opposite sides in contact with the ground connected to the wire 22, the several spark plugs are connected in

parallel between the wire 28 and the ground. The contact 29 is carried by the operating lever 6, being insulated therefrom by the insulation 30.

5 My device in its normal position with the parts as shown in Figure 1 has the circuit to the spark plugs broken. When the lever 6 is pulled down to open the valve 4, the contact 29 closes the circuit between contacts 10 24 and 27 and the spark gap of the plugs is bridged by the spark. The gas passing out of the opening 9 and up through the mixing chamber 10 draws with it air between the skirts 12 and the portion 9 of the bleeder 15 pipe. This air, with the gas, forms a combustible mixture which is ignited by the plugs 14. Portions, however, of the gas will not be completely burned but will pass on through the screen 15 which will serve to hold down and break the flame caused by the inner spark plugs. This portion of the gas passing out through the screen 15 is ignited by the plugs 19 and forms a flame above the screen, the screen providing a contact point 25 for the flame. This particular construction is of great importance in preventing the flame from blowing and floating away from the end of the bleeder pipe.

30 My device is very simple and may be readily attached without great expense to existing bleeder discharge pipes. Its use in existing installations avoids the danger and discomfort due to gas blowing about the works, and on new installations the use of my 35 device will avoid the necessity for carrying the bleeder discharge pipe to great heights in the attempt to avoid having the gases discharged into the works. The form of electrical circuit shown in somewhat diagram- 40 matic and it is to be understood that varying types of switches and switch operating means may be used. Further modifications of the elements of my device may be made within the scope of the appended claims in 45 order to adapt the apparatus for varying uses.

I claim:

1. In combination with a bleeder valve of a gas system, an air and gas mixing head as- 50 sociated with the valve discharge port, and means located in said head adapted to ignite gas therein.

2. In combination with a bleeder valve of

a gas system, a mixing head associated with the valve discharge port, and means located 55 in said head adapted to ignite gas therein, said means comprising spark gaps in an electrical circuit normally broken, and adapted to be closed by the opening of the bleeder valve. 60

3. In combination with a bleeder valve of a gas system, a mixing head associated with the valve discharge port, a screen located ad- 65 jacent the discharge end of the mixing head and in the path of gases discharged therefrom, and means located beyond said screen adapted to ignite gas passing therethrough.

4. In combination with a bleeder valve of a gas system, a mixing head associated with the valve discharge port, a screen located ad- 70 jacent the discharge end of the mixing head and in the path of gases discharged therefrom, and means located beyond said screen adapted to ignite gas passing therethrough, said means comprising spark gaps in an elec- 75 trical circuit normally broken, and adapted to be closed by the operation of the bleeder valve.

5. In combination with a bleeder valve of a gas system, a mixing head associated with 80 the valve discharge port, means located in said head adapted to ignite gas therein, a screen located adjacent the discharge end of the mixing head and in the path of gases discharged therefrom, and means located in 85 said head and beyond said screen adapted to ignite gas both in the head and beyond the screen.

6. In combination with a bleeder valve, of a gas system, a screen located in the path 90 of the gas discharged from the bleeder valve, and means beyond the screen adapted to ignite gas passing therethrough.

7. In combination with a bleeder valve of a gas system, a screen located in the path 95 of the gas discharged from the bleeder valve, and means beyond the screen adapted to ignite gas passing therethrough, said means comprising spark gaps in an electrical circuit normally broken, and adapted to 100 be closed by the operation of the bleeder valve.

Signed at Chicago, Illinois, this 11 day of May, 1921.

FREDERICK H. WILLCOX.