

NOTE

Development of Apparatus for the Instant Production of Dry Gases or Fumigants

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To cope up with the demand to produce dry gases for laboratory and agricultural purposes, a modified leak-proof dry gas producer is designed which can be used in agriculture for spraying instantly prepared fumigants or dry gases.

Key Words: Dry-gas producer, Drying-chamber, Reaction vessel.

Dry gases are used in chemistry^{1,2} as well as in agriculture. Therefore, a leak-proof dry gas producer is designed and fabricated to meet this demand. The apparatus consists of the following three major parts (Fig. 1):

(1) Gas producer, (2) Drying chamber, (3) Reaction vessel.

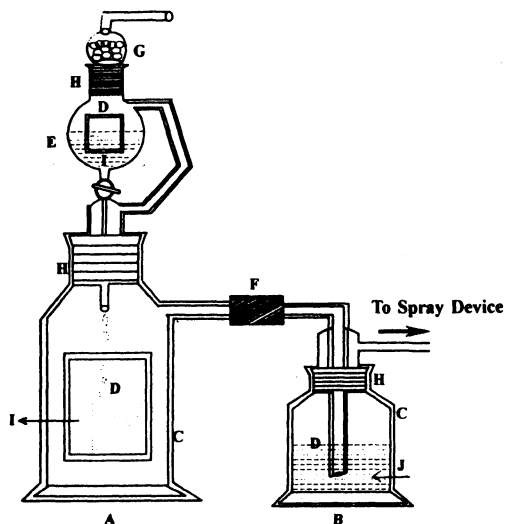


Fig. 1. Dry gas producer: A = Gas producer; B = Drying chamber; C = Reaction vessel; D = Gas trap; E = Pressure equalizer; F = Reaction mixture for production of gas; G = Guard tube (CaCl_2); H = B-24 or B-19 joints; I = Drying agent; J = Reaction mixture in which gas is passed.

(1) **Gas producer:** It is a glass-vessel with B-24 neck in which is fitted a pressure-equalizer. Solid reagents are taken in the vessel and liquid in the pressure-equalizer. It is connected through a side exit-tube to the drying-chamber. A good quality rubber-tubing joins the side-tube to the gas-trap of drying-chamber.

(2) **Drying chamber:** Drying chamber is also a glass-chamber with B-24 joint and contains drying agents. In the neck of the chamber is fitted a gas-trap. The gas-trap is a B-24 joint with a glass-tube in the centre, the top of which is bent and

connected to a gas-producer, the lower part remains dipped in a drying agent. This too contains an exit side tube that connects this chamber to the reaction vessel.

(3) Reaction vessel: The reaction vessel is again a glass-vessel with B-24 joint. It is filled with the reaction mixture through which dry gas is to be passed. A B-24 gas-trap fitted in its neck makes a connection between this chamber and the drying-chamber with the help of a good quality rubber-tubing.

When liquid reagent for the production of dry gas is added to the solid reagents for producing dry gas, the reaction starts. Addition should be drop by drop; otherwise large amount of gas produced will produce high pressure which may cause explosion. This gas through the exit tube enters into the drying-chamber where it becomes dry and leads through the exit-tube and the rubber-tubing to the reaction vessel. Excess of gas goes out through the guard tube present on the exit-end.

In the present work, this apparatus with a little modification may be used in agricultural fields (Fig. 2), where it may be used to spray unstable and poisonous dry gases to kill pests. For this purpose, it may be jacketed in the metallic case which

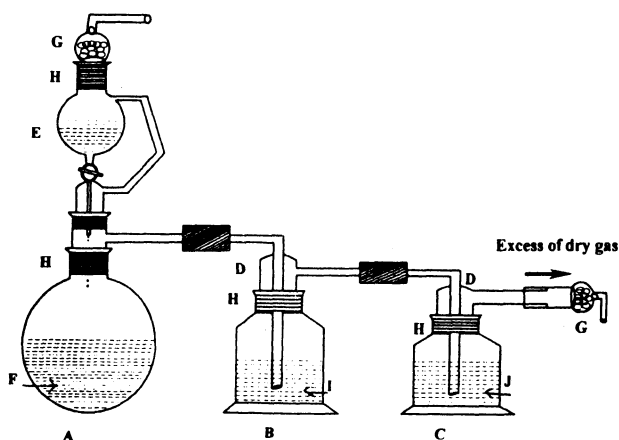


Fig. 2. L.S. of proposed dry and instant fumigant-producer for use in agriculture : A = Fumigant producer; B = Drying chamber; C = Metallic case; D = Glass window; E = Pressure equalizer; F = Good quality rubber tube; G = Guard tube (CaCl_2); H = B-24 or B-19 joints; I = Fumigant producing reagents; J = Drying agent

helps in maintaining the reaction conditions. Besides, the front of the gas-chamber should be made of plexi-glass to monitor the flow of liquid reagent and to keep a watch on the solid reagents. Here, ground-glass joints may be replaced by screws to make its washing easy.

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