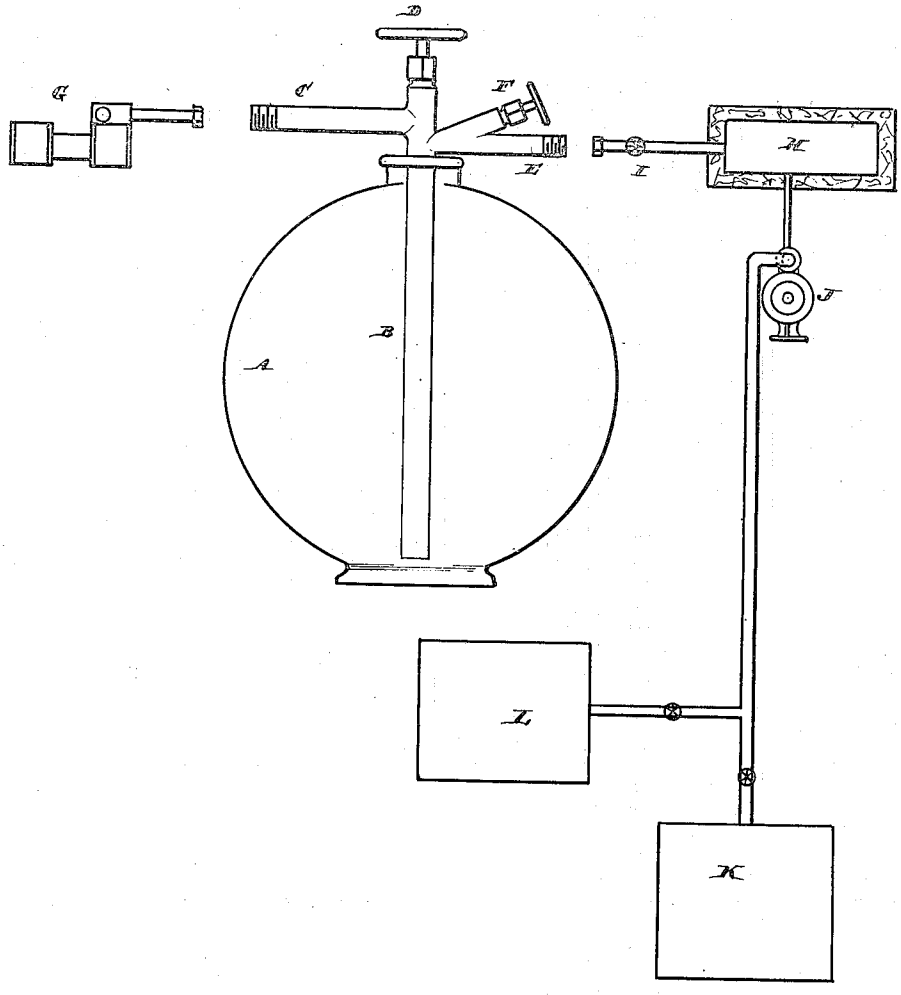
(No Model.)

G. H. HOLGATE.

BINARY FLUID.

No. 421,076. Patented Feb. 11, 1890.



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UNITED STATES PATENT OFFICE.

GEORGE H. HOLGATE, OF PHILADELPHIA, PENNSYLVANIA.

BINARY FLUID.

SPECIFICATION forming part of Letters Patent No. 421,076, dated February 11, 1890.

Application filed May 10, 1886. Serial No. 201,655. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE H. HOLGATE, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Commercial Binary Fluid Anhydrous Carbonic and Sulphurous Acids, of which the following is a specification.

My invention has reference to a preparation of a binary fluid of anhydrous sulphurous acid and carbonic acid as an article of commerce; and it consists in liquefied sulphurous acid and carbonic acid in an anhydrous condition and as a binary fluid, and sealed in air-tight vessels, from which it may be drawn off as needed.

My object is to furnish a commercial form of a binary fluid of anhydrous sulphurous acid and carbonic acid capable of being handled as required and transported without danger. A binary liquid of this kind has some of the most valuable properties, as it is capable of extinguishing fires, is one of the best disinfectants, may be used for bleaching, and when in this form may be used by chemists with satisfaction, obviating the necessity of generating the gas as needed in the old and crude way. This powerful destroyer of germs of disease may in this liquid shape be used to saturate and thoroughly impregnate infected garments or furniture, and can be used by the most ignorant.

In the drawing is shown a glass vessel very similar to what is known as a "seltzer-water bottle," in which the anhydrous binary fluid is contained for commerce, with diagrams illustrating apparatus for the preparation and packing of said acid.

A represents a globular vessel of glass capable of withstanding several hundred pounds pressure.

B is a tube extending down to the bottom of the vessel, and terminates at C in a discharge-tube, and is provided with a valve D to allow of the escape of the liquid.

E is a supply-pipe, which is provided with a valve F. To fill the vessel, the air is first drawn off by a vacuum-pump G, which is connected with pipe C, and after the greatest practical vacuum is created the valve D is closed. The binary liquid anhydrous sulphurous acid and carbonic acid is then admitted from tank H by pipe I, which connects with pipe E, to the vessel A by simply opening the valve F. When the vessel is full, the valve F is closed and the vessel A disconnected from pump G and pipe I, and is ready for shipment, it containing the binary liquid under pressure of several atmospheres.

K represents a chamber when fumes of sulphurous acid are generated, and which fumes are compressed by pump J and liquefied in tank H, which, during the liquefaction of the gas, may be cooled by refrigerants.

L is a chamber in which carbonic-acid gas is generated from sulphuric acid and marble-dust, or otherwise, and also connects with pump J, whereby the carbonic acid may be compressed and liquefied in the tank H. If desired, there may be two pumps—one for sulphurous acid and one for carbonic acid—so that both gases could be compressed separately and at the same time. It is immaterial to my invention how the liquefied sulphurous acid and carbonic acid is generated and stored, as various forms of apparatus may be used. When this sealed vessel is charged, it may be shipped or handled without much care and become a commercial and merchantable article. To use it, it is simply necessary to open valve D, and the liquid as it passes the valve expands and becomes a gas, producing a great refrigerative effect. The pressure under which it escapes is so great that it may be caused to permeate the substance or article to be acted upon most thoroughly by pressing the pipe C against the thing to be treated. In this condition a small vessel of the acid will generate an enormous volume of gas.

I do not limit myself to any particular construction of sealed vessel.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

As a new article of manufacture and commerce, a liquefied mixture of sulphurous acid and carbonic acid in an anhydrous condition and as a binary fluid.

In testimony of which invention I hereunto set my hand.

GEO. H. HOLGATE.

Witnesses:

R. M. HUNTER,

E. M. BRECKINREED.