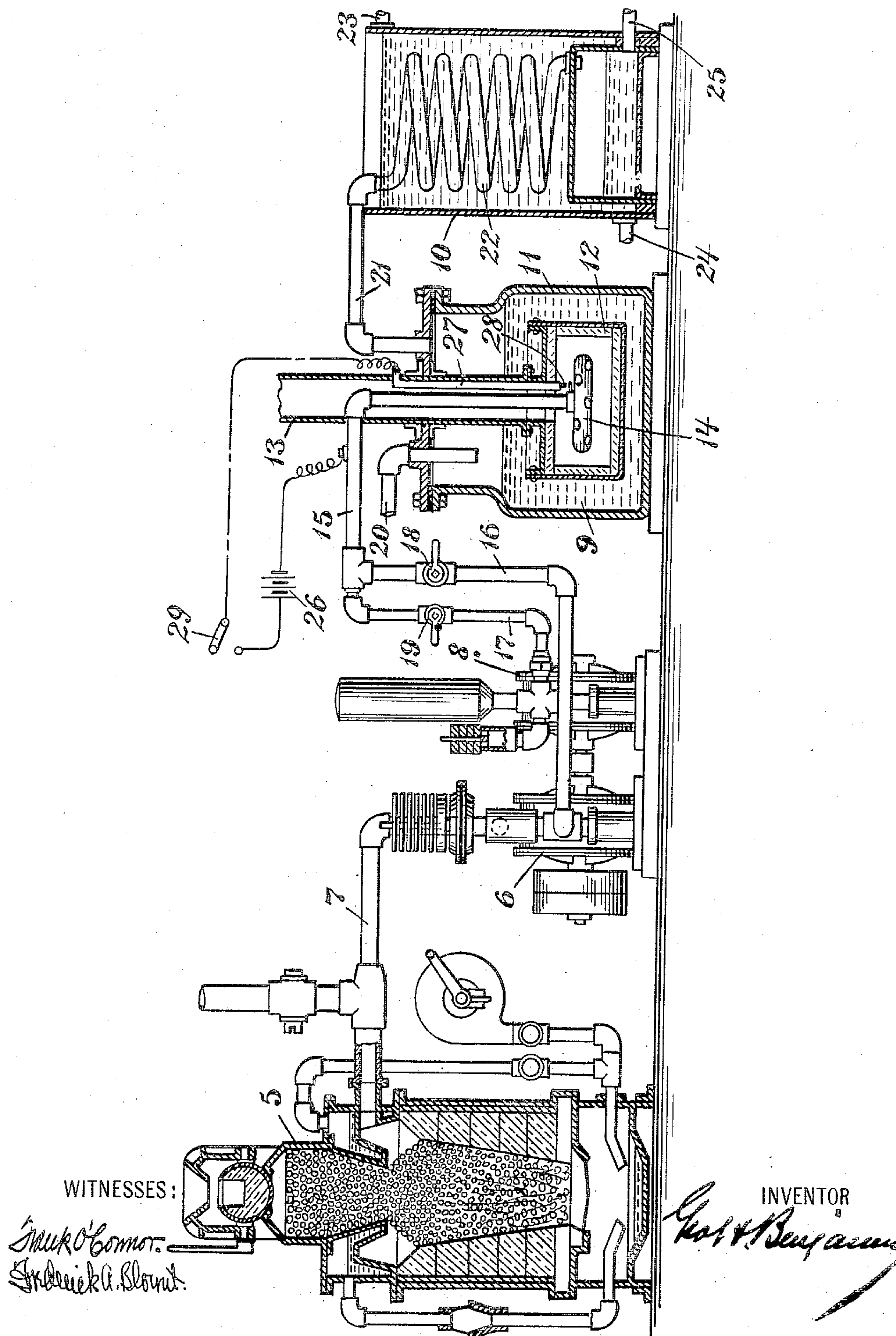


G. H. BENJAMIN.
 APPARATUS FOR VAPORIZING FLUIDS.
 APPLICATION FILED DEC. 18, 1906.

953,682.

Patented Apr. 5, 1910.



UNITED STATES PATENT OFFICE.

GEORGE H. BENJAMIN, OF NEW YORK, N. Y.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE HILLARD BENJAMIN, a citizen of the United States, residing in the city, county, and State of New York, have invented an Apparatus for Vaporizing Fluids, of which the following is a specification.

My invention consists in an apparatus such as may be used in the production of salt, soda, or other bodies where high temperature may be used to evaporate the fluid constituent, and generally in distillation.

Considered broadly, my invention consists in an apparatus through the instrumentality of which very high temperature may be applied within the mass of the body to be acted on, rather than to the external surface or surfaces of the body as is now usually the case. By reason of my improved apparatus, the heat units produced are applied where they are most effective.

My invention is based upon the observed fact that it is possible to generate a gas which may be burned without the introduction of air other than that contained in the gaseous mixture. In practice I have found that with such a gas, a temperature of approximately 3,000 degrees may be generated.

The accompanying diagrammatic drawing, which illustrates a gas producer, a vaporizing apparatus and a condenser apparatus in partial section, with the communicating pipes and pumps in elevation, will serve to illustrate the general arrangement of the parts for carrying my invention into effect.

In the drawings, 5 represents a gas producer which may be of any well known type, preferably one that will generate a gas high in carbon and hydrogen. The producer shown in the drawings is of the "Otto" type and generates what is known as a semi-water gas ("Dowson's gas"); 6 gas pump, which is connected to the producer through a pipe 7; 8 air pump, 9 evaporator, 10 condenser. The evaporator may be of any suitable shape and consists of an inclosing shell 11, within which is placed a chamber 12, the walls of which serve to exclude the body to be evaporated from the interior of the chamber. Preferably this chamber is provided with a refractory lining of metal, fire clay or other material which will transmit heat and not be destroyed by the flame within the chamber. Leading from the top of the chamber 12 is an exit flue 13, through which

the products of combustion from the chamber may be led to the atmosphere. Located in the chamber 12 is a burner 14. This burner is connected to the gas and air pumps through the pipes 15, 16, 17. In the pipes 16, 17 are controlling valves 18, 19.

20 represents a pipe through which the body to be evaporated is introduced into the evaporator, and 21 a pipe leading from the top of the evaporator to the worm 22 of the still 10; 23 and 24 inlet and exit pipes for the cooling water of the still; 25 pipe through which the condensed fluid may be drawn from the still.

The burner 14 may be of any suitable type. In order to ignite the burner, it is connected to one pole of an electric battery, 26, the other pole of the battery, being connected to a rod 27, on the end of which is a platinum pin 28 located over the burner. 29 is a switch for closing the circuit through the battery.

The operation of the device is as follows: The body to be evaporated is introduced into the evaporator and gas and air from pumps 6 and 8 are delivered through pipe 15 to burner 14 and there ignited. I prefer that the gas and air should be delivered at a pressure of $1\frac{1}{2}$ pounds for gas, and 1 pound for air, as I have found such to be most suitable for the purpose.

Having thus described my invention, I claim:

1. An evaporator comprising a receptacle, a substantially closed heating chamber within said receptacle, a refractory lining therefor, a burner within said heating chamber, and a fuel-supply pipe connected to said burner.

2. An evaporator comprising a closed receptacle, a substantially closed heating chamber inclosed in said receptacle, a refractory lining therefor, a burner within said chamber, a fuel-supply pipe connected to said burner, an exhaust conduit surrounding said supply pipe, and means for igniting said burner in its operative position.

3. An apparatus for vaporizing fluids, comprising a gas producer, a gas pump, an air pump, an evaporator consisting of a closed fluid receptacle and a substantially closed chamber therein, a refractory lining within said chamber, a burner in said chamber, communicating pipes interposed between said gas producer, pumps and burner, an exhaust conduit, together with means for

controlling the relative proportions of gas and air fed to the burner.

4. An apparatus for vaporizing fluids, comprising a gas producer, a gas pump, an
5 air pump, an evaporator consisting of a closed fluid receptacle and a substantially closed chamber in said receptacle, a refractory lining within said chamber, a burner in said chamber, communicating pipes inter-
10 posed between said gas producer, pumps and burner, means for controlling the relative

proportions of gas and air fed to the burner, an exhaust conduit surrounding said supply pipe, and means for igniting the burner when in operative position. 15

In testimony whereof, I affix my signature, in the presence of two witnesses.

GEO. H. BENJAMIN.

Witnesses:

FREDERICK A. BLOUNT,
FRANK O'CONNOR.