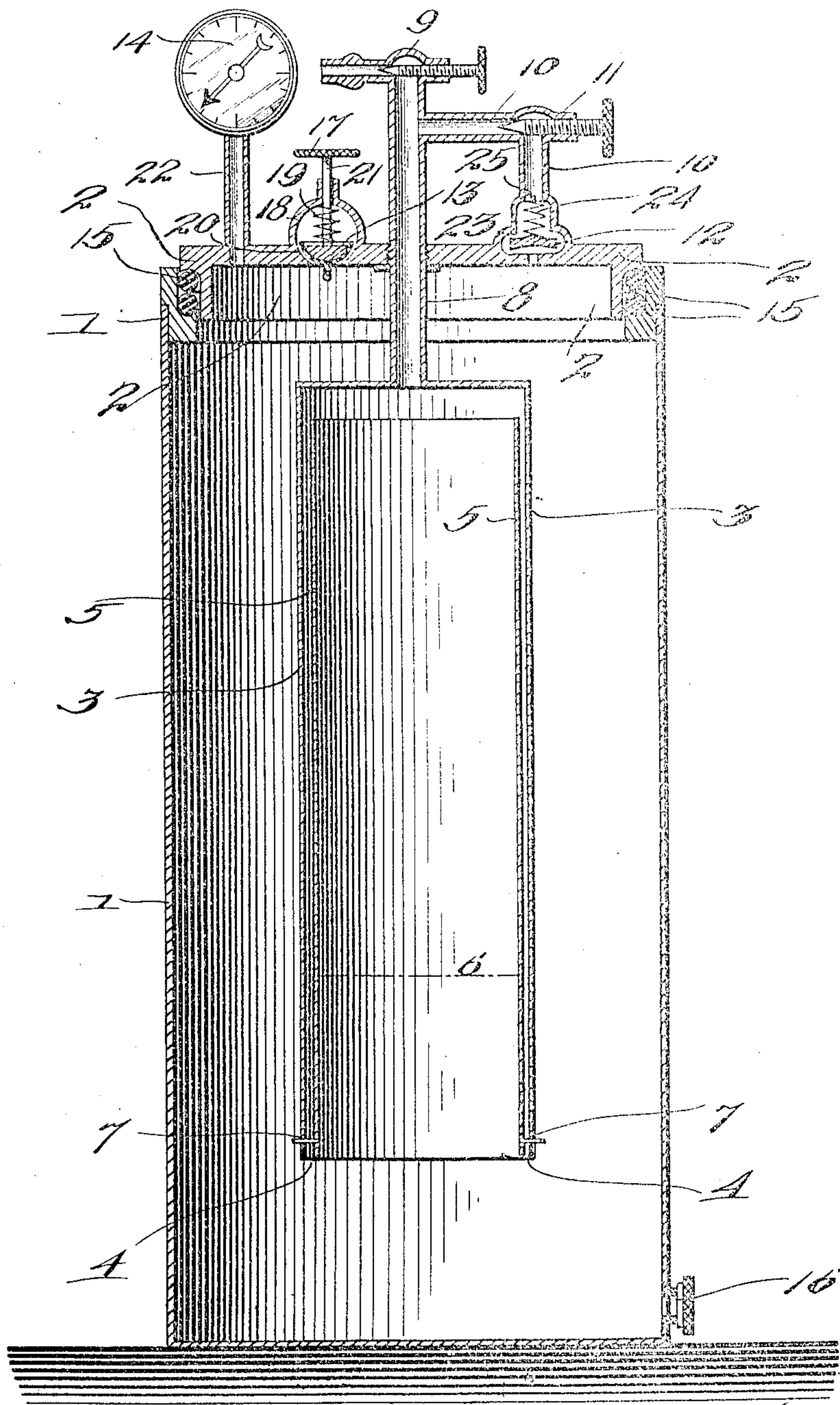


R. VON FOREGGER.  
GAS GENERATOR.  
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916,291.

Patented Mar. 23, 1909



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# UNITED STATES PATENT OFFICE.

RICHARD VON FOREGGER, OF BENSONHURST, NEW YORK, ASSIGNOR TO THE ROESSLER & HASSLACHER CHEMICAL COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## GAS-GENERATOR.

No. 916,291.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed January 30, 1908. Serial No. 413,383.

*To all whom it may concern:*

Be it known that I, RICHARD VON FOREGGER, a subject of the Emperor of Austria-Hungary, residing at Bensonhurst, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Gas-Generators, of which the following is a specification.

My invention relates to an apparatus for the generating of gas under pressure having particular relation to such generation of oxygen gas.

Oxygen gas under pressure for example is to be had in three ways.

First, the ordinary cylinders into which oxygen is charged by the manufacturers of same for storage under high pressure, in which form it is sold to the user. In the above described form it is impractical as for use the pressure of several hundred pounds has to be reduced to a working pressure to insure uniform working. Furthermore it is not economical on account of losses which are unavoidable with high pressure. It is also dangerous, being subject to explosion under certain circumstances. It is also clumsy and bulky in form and not convenient for handling and transporting.

Secondly, the oxygen is generated by a purely chemical process and is stored in a gasometer where it is put under pressure ready for use. Such apparatus is constructed in the form of a stationary plant and has in connection therewith an extensive tube arrangement so that the gases may be transferred to any suitable place where needed. It is evident that in such installations some inconveniences are attached; that is, space is required for the installation of tubes, etc.

Thirdly, oxygen is produced from sodium peroxid in its fused or compressed form by bringing water in contact therewith. The container in connection is suitably elevated permitting the obtaining of gas under pressure. However, to obtain the pressure most commonly used for blow pipes, etc., which is 15 pounds, about 30 feet difference of water level is required. Such heights make the use of such a generator in many ways impossible and as the apparatus consists of two containers or more connected either by a rigid pipe or by means of a flexi-

ble rubber tube, it can hardly be considered as portable.

My invention overcomes the objectionable features described and provides a means for producing the gas under any desirable pressure. For example, from one-half pound to thirty pounds and if necessary the apparatus can be so constructed as to generate a still higher degree of pressure which apparatus is at the same time very handy and easy to handle and transport.

To accomplish the above result I have constructed a generator, one form of which is shown in the drawing, in which the figure illustrates the apparatus in vertical sectional view.

1 indicates an outer container adapted to contain water. 2 designates a cover hermetically sealed to said container 1 by any suitable means.

3 is an inner container in its form an inverted bell, provided with an open end 4 at its lower end and adapted to have mounted therein a cylinder 5, said cylinder 5 having in turn mounted therein a perforated metal sheet 6. Cylinder 5 may be held in position in inner container 3 by means of extensions or rods 7 in the lower ends of said cylinder 5 passing through the walls of container 3. The upper end of inner container 3 ends in a neck portion 8 which has mounted at its upper end a needle valve 9. Neck 8 communicates with the inner part of inner container 3. A tube 10 connects the outer container and neck 8 at a point intermediate valve 9 and cover 2 forming thus a communication between the inner and outer containers. Tube 10 carries a needle valve 11 and may have an enlarged portion at its base above cover 2, forming a chamber for a suitable pressure valve 12. Cover 2 also carries a safety valve 13, which serves to permit the gas to escape when the pressure is too great or the gas may escape by pulling up button 17. Another opening in cover 2 provides for the pressure gage 14.

15 indicates rubber gaskets between the edge of the cover and upper rim of outer container 1, to make the container airtight and assist in hermetically sealing the same. The cover is held tightly to the container by any suitable means as by screws or a suitable



spring lever (not shown). Near the bottom of the outer container is an opening which is closed by screw cover 16.

The pressure valve 12 in chamber 23 is controlled by a spring 24 fastened to stud 25. The spring may be made adjustable so that the valve 12 will operate to open or close at a predetermined pressure.

To put the generator as described in a working condition, the chemical from which the gas is produced is placed on the perforated sheet 6 in the inner cylinder 5, and the same is placed in the container 3. The outer container 1 is filled with water up to a designated water mark which may be for example about two-thirds of the distance from the bottom. The inner container or inverted bell which supports the chemical is then placed within said outer container and the cover 2 which preferably forms one piece with the inner container as shown is hermetically sealed to the outer container. The needle valves 9 and 11 are both closed. The pressure at this time in the generator will be the ordinary atmospheric pressure. The water level in the inner container will only be a trifle above the lower end of same, and therefore not in contact with the chemical.

The operation of the generator has two functions, the production of pressure and the yield of gas under pressure. In order to obtain the desired pressure needle valve 11 is opened. The consequence is that on account of the difference of water level in the outer and inner containers, free passage of air now being permitted,—but only within the apparatus—the water level in the inner container will rise and the water will come into contact with the chemical, resulting in the generation of gas. As the gas cannot escape from the apparatus, needle valve 9 still being closed, it will pass through tube 10 and be compressed and, a difference of water level still prevailing, a continuous contact of water and chemical is insured. When the desired pressure indicated by the pressure gage is obtained, needle valve 11 may be closed. This is, however, not essential, as the function of pressure valve 12 is to close tube 10 and shut off communication between the inner and outer containers as soon as the pressure reaches the point to which valve 12 is adjusted. With the proper pressure available the generator is ready for use; the needle valve 9 can be opened for passage of the gas for whatever purpose desired. With the opening of needle valve 9 conditions are again given to allow the contact of water and chemical, thus providing for a continuous generation of gas, which, with proper adjustment as set forth, will maintain an even pressure. Should the supply of gas desired be large it is advisable to operate with the needle valve 11 open. The pressure valve

12 which, with pressure at the desired point closes, will, as soon as the pressure goes below the point, open. The result will be that besides the discharge to the outside the inner circulation of gas takes place, securing quicker reaction and more generation of gas until, when the desired pressure is obtained, pressure valve 12 closes up again.

The principle of my invention is thus: The creation of an inner circulation of the gas or an internal discharge, in order to produce pressure. The gas therefore produces its own pressure. This simple auto-generation of gas pressure works up to any amount of pressure within required limits, thus doing away with all unnecessary mechanical means of compressing the gas, or, if the gas has been compressed, reducing it again to working pressure.

It is obvious that the details of the apparatus described may be designed in different forms and ways without departing from the spirit of the invention. I do not restrict myself, therefore, to the design shown, but desire to claim broadly a pressure generator automatically generating the pressure by the action of an inner circulation or an inner discharge apart from the discharge for the gas consumed.

What I claim and desire to secure by Letters Patent is:

1. An apparatus for generating gas under pressure comprising an hermetically sealed outer container, an inner container within said outer container and sealed therefrom, gas generating means within said inner container, a discharge connection from said inner container, a valve controlling said discharge, a by-pass from said discharge to said outer container intermediate said valve and said inner container, and a valve controlling said by-pass.

2. An apparatus for generating gas under pressure comprising an hermetically sealed outer container, an inner container within said outer container and sealed therefrom, gas generating means within said inner container, a discharge connection from said inner container, a valve controlling said discharge, a by-pass from said discharge to said outer container intermediate said valve and said inner container, an automatically controllable means for opening and closing the connection between said by-pass and the outer container.

3. An apparatus for generating gas under pressure comprising an hermetically sealed outer container, an inner container within said outer container and sealed therefrom, gas generating means within said inner container, a discharge connection from said inner container, a valve controlling said discharge, a by-pass from said discharge to said outer container intermediate said valve and said



inner container, a valve controlling said by-pass and automatically controllable means intermediate said last named valve and the outer container for opening and closing the  
5 connection between said by-pass and said outer container when said valve is open.

In testimony whereof I have hereunto

signed my name in the presence of two subscribing witnesses.

RICHARD VON FOREGGER.

Witnesses:

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