

No. 645,545.

Patented Mar. 20, 1900.

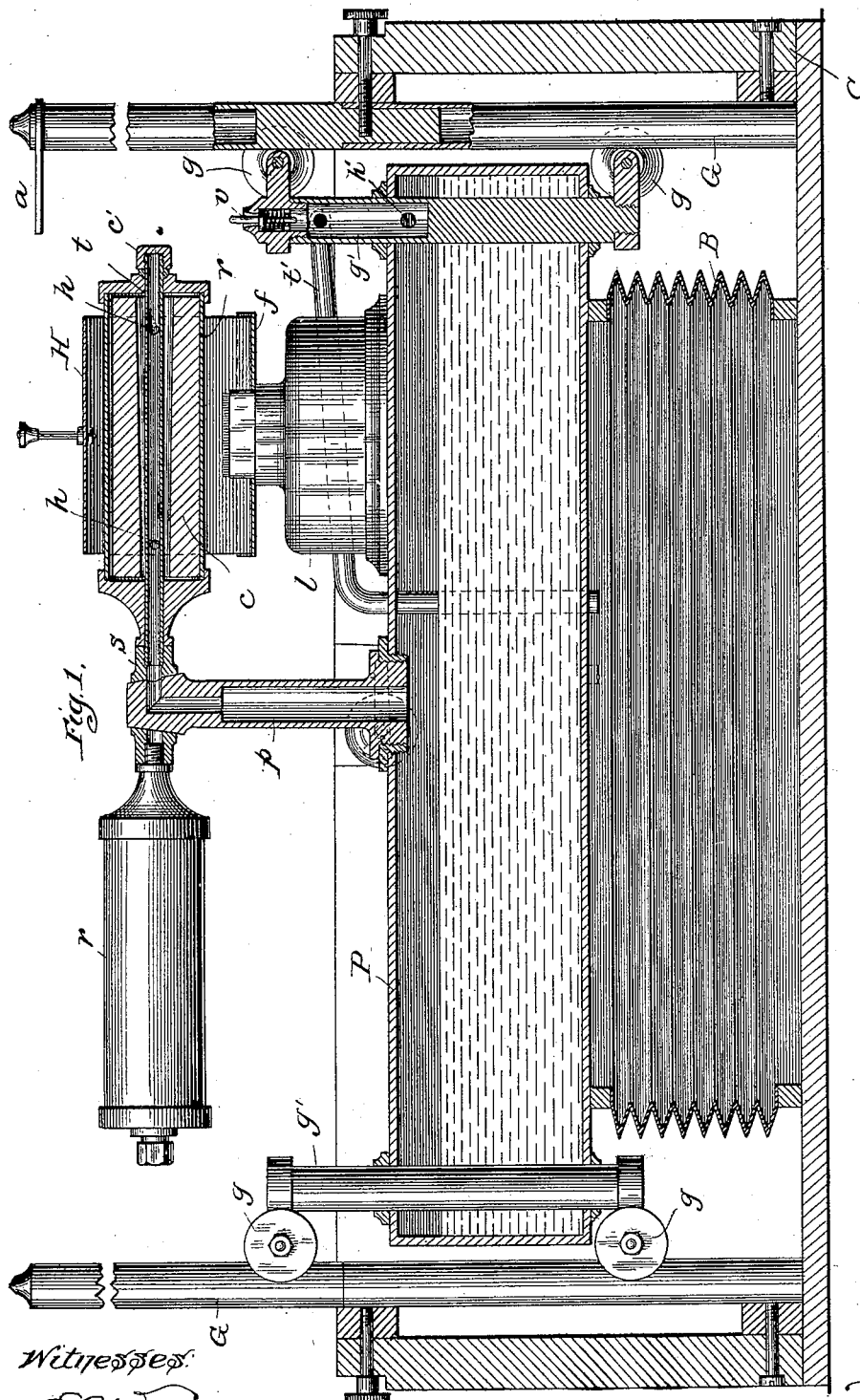
W. BLACKIE.

GAS GENERATING AND STORING APPARATUS.

(Application filed Sept. 23, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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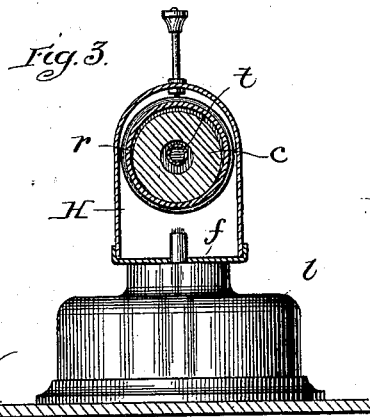
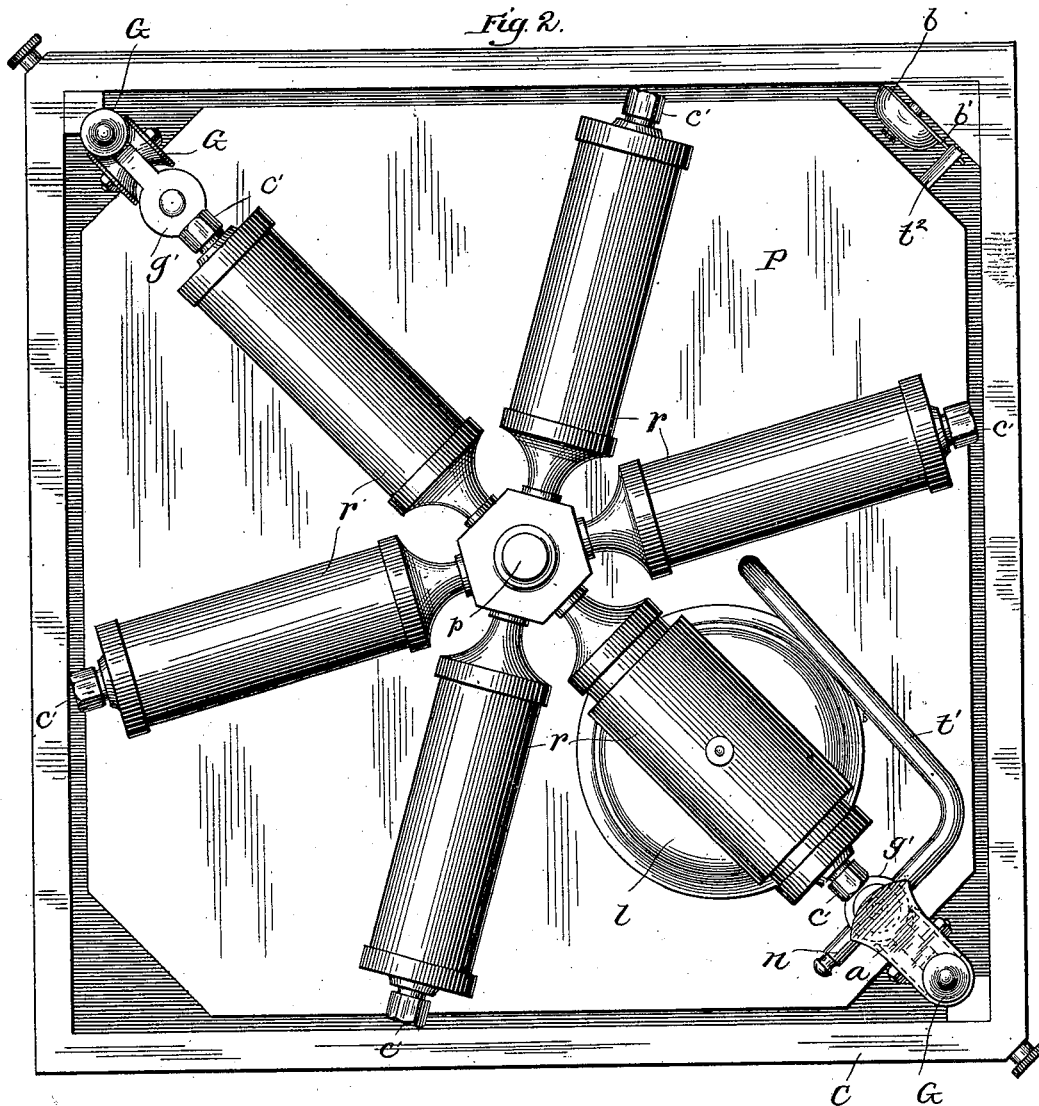
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

WILLIAM BLACKIE, OF LONDON, ENGLAND.

## GAS GENERATING AND STORING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 645,545, dated March 20, 1900.

Application filed September 23, 1898. Serial No. 691,743. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BLACKIE, a subject of the Queen of Great Britain, residing at London Bridge, London, in the county of Surrey, England, have invented a certain new and useful Improvement in Gas Generating and Storing Apparatus, of which the following is a specification.

This invention relates to gas generating and storing apparatus.

According to my invention I liberate the oxygen by decomposing chlorate of potash by the application of heat at the time and at the place it is to be used, so dispensing with large storage-bags or compressing into cylinders.

In carrying out my invention I employ a case fitted with a gas-bag, the top of which forms a platform and is made hollow to hold water, the weight of which gives the necessary pressure to the oxygen in the bag, the whole working guides to keep the platform level as it rises and falls when the oxygen is admitted to or drawn from the bag. Upon this platform is mounted a hollow central pillar fitted with a swivel-head and a number of tubes or retorts capable of revolving gas-tight around the central pillar as a center and at a sufficient height to allow of a heating-lamp being placed under the retorts. Each of the retorts is charged with the usual oxygen mixture of chlorate of potash and manganese, but pressed into cakes either solid or annular in section across the direction of their length, and each retort is capable of being brought successively over the heating-lamp, the oxygen when liberated from the cakes being led away for use.

In the accompanying drawings, Figure 1 is a section of apparatus made in accordance with my improvement, showing one of the retorts in elevation, the other being shown in section over the heating-lamps; Fig. 2, a plane view; and Fig. 3, a cross-section through one of the retorts, showing the lamp in elevation. Like letters indicate like parts throughout the drawings.

C is the case which contains the several parts of the apparatus, which may be of any suitable design, but is here shown as square, while B represents the gas-bag for storing the oxygen.

P is a tank which rests upon the gas-bag

and in practice contains a sufficient amount of water to add the proper weight to the bag for storing the gas under pressure, while the top of this tank serves as a platform.

G are guides the object of which is to maintain the platform in a level position, and this is accomplished by the grooved rolls *g*, journaled to the posts *g'*, carried by the tank, as clearly shown in Fig. 1.

*p* is a pillar supported upon the tank and projecting upward for sustaining the retorts *r*, which are cylindrical in shape, suitably connected with the turn-table *s*, which is so fitted upon the post as to form a multiple-way valve, the interior of said post being hollow and leading to the tank. Each of the retorts when brought into proper position are put in communication with the tank through the post, as is clearly shown upon the right-hand of Fig. 1. A lamp *l* is placed upon the platform and carries a ladder *f*, upon which the head *H* may be placed. The interior of each retort has a tube *t* therein, which is provided with the holes *h* for the passage of the gas when generated to the interior of the post *P*. The gas-generating material, such as chlorate of potash, is made in cylindrical form, as shown at *c*, and is placed within the retort, the hole therein being of somewhat larger diameter than that of the tube *t*. A bell *b* is secured to the casing and adapted to be actuated by the striker *b'*, carried by the platform.

The position of the parts when the machine is to be started is as represented in the drawings, with water in hollow platform *P*, spirits in lamp *l*, a cake of oxygen mixture *c*, Figs. 3 and 4, in each of the retorts *r*, and a bag *B* collapsed. Upon lighting the lamp *l* oxygen is liberated from the cake *c* directly over it, passes through the holes *h* along the stay-tube *t*, down the pillar *p*, and onto the surface of the water contained in the hollow platform *P*, which cools it. The oxygen then passes through the holes *h'* and out of the nosepiece *n* by flexible tube to the jet, the surplus oxygen finding its way through the tube *t'* to the bag *B*, so lifting the hollow platform *P*, containing water, and the apparatus fixed upon it. In case of there being more oxygen formed than the bag *B* will hold the platform *P* rises sufficiently to bring the re-

lief-valve *v* in contact with the abutment *a*, so allowing the gas to escape, and when the platform sinks till the tappet *t*<sup>2</sup> comes in contact with the bell-lever *b'* the bell is sounded, so indicating that a fresh retort is required to be brought over the heating-lamp *l*, and so on, each one in succession, till the contents of all the retorts are spent.

The hood *H* is for guarding the flame of the heating-lamp *l*. It also fixes the retort under operation in position by dropping between flanges *P' P'* of the holder *f*, fixed on the heating-lamp, the hood having to be taken off and replaced each time the retorts are moved.

The object of making the oxygen mixture *c* of annular cross-section is to secure the best results in the decomposition by the application of heat, and it also allows free passage of the stay-tube *t* and simplifies the fixing of the cap *c'* in place to close the end of the tube.

Of course I do not wish to be limited to the exact details of construction here shown, as these may be varied to a certain extent without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

1. In a gas generating and storing apparatus, suitable casing, a gas-bag arranged therein, a tank carried upon said bag, said tank serving as a platform, a post projecting upward from the platform, a turn-table fitted thereon, retorts carried by the turn-table,

means of communicating between the retort, tank and bag, and a lamp for successively heating the retorts, as specified.

2. A gas generating and storing apparatus consisting of a suitable casing, a gas-bag located therein, a tank adapted to hold water resting upon said bag, means for guiding said tank vertically, a post projecting upward from the tank, the interior of which communicates therewith, a turn-table fitted upon the upper end of the post, a series of retorts connected with the turn-table, said retorts being adapted to receive gas-forming material in cylindrical shape, means of communicating between the retorts and the post, a lamp for generating gas from said material so located as to act upon one of the retorts at a time, and a hood for confining the heat of the lamp, as specified.

3. In a gas generating and storing apparatus the combination of a series of retorts, a turn-table to which said retorts are connected, tubes leading from the retorts to the interior of the turn-table, a hollow post upon which the turn-table is fitted and provided with inlet and outlet openings whereby gas formed in the retorts may be conveyed therethrough.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

WILLIAM BLACKIE.

Witnesses:

SAMUEL LARK HOLFORD,  
H. D. JAMESON.