

G. POE.
GAS GENERATOR.
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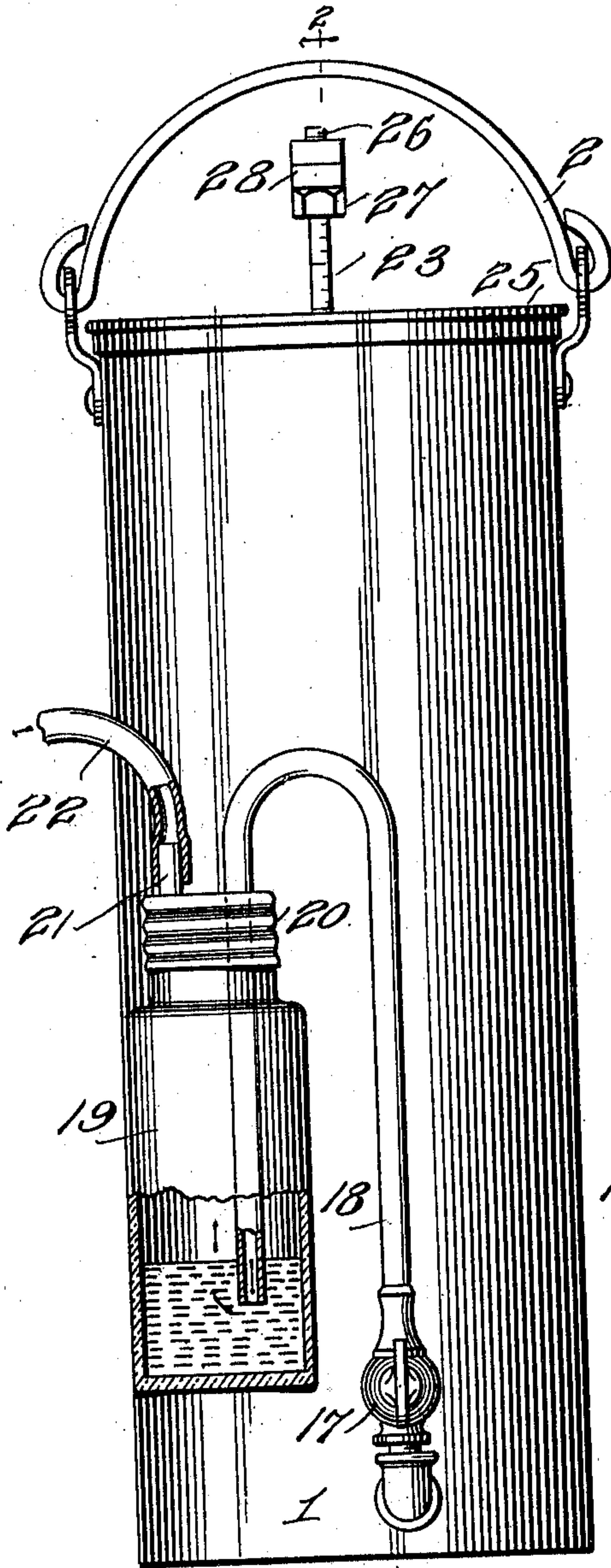
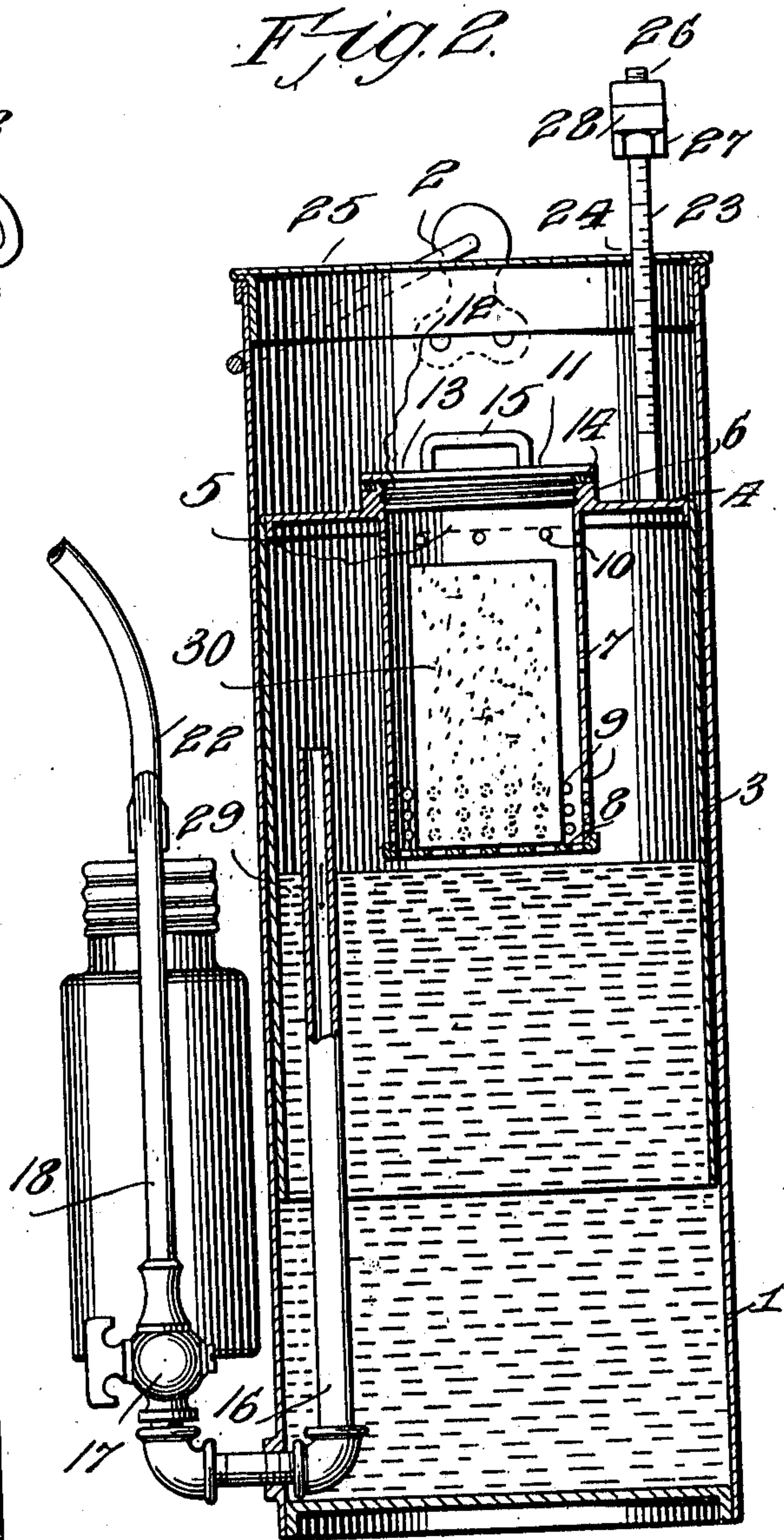


Fig. 1



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GEORGE POE, OF SOUTH NORFOLK, VIRGINIA, ASSIGNOR TO POE INVENTION CORPORATION, OF NORFOLK, VIRGINIA, A CORPORATION OF VIRGINIA.

GAS-GENERATOR.

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To all whom it may concern:

Be it known that I, GEORGE POE, a citizen of the United States, residing at South Norfolk, in the county of Norfolk and State of Virginia, have invented new and useful Improvements in Gas-Generators, of which the following is a specification.

The invention relates to an improvement in gas generators, being more particularly directed to an apparatus in which the gas generated will be at all times delivered under a predetermined pressure, which is variable at pleasure, and in which the generation of the gas is automatically controlled by the use of the gas, in that the generation is continuous during the withdrawal of the gas from the apparatus and automatically ceases upon cutting off the outflow from the apparatus.

The main object of the present invention is the provision of a generator in which the gas is produced by the chemical combination of two materials, one of said materials being carried by and movable with an element of the apparatus, the position of which is controlled directly by the gas generated, whereby in the generation of the maximum quantity of gas for which the particular apparatus is designed said element will be so positioned as to separate the gas producing materials thereby discontinuing the generation.

A further object of the invention is the provision of means whereby the quantity of gas withdrawn from the apparatus during any particular period may be readily and accurately measured, thereby determining the quantity of gas used and also the generating capacity remaining in the apparatus.

A further object of the invention is the provision of means whereby the pressure of the gas delivered from the apparatus may be readily controlled to suit the particular requirements of the occasion, and also to construct the apparatus of a light, compact character to render it readily portable and thereby of the maximum service for emergency uses when the apparatus is in use as an oxygen generator.

The invention in its preferred details of construction will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is an elevation of the improved apparatus, with the washer partly in section. Fig. 2 is a vertical sectional view, partly in elevation, on the line 2—2 of Fig. 1.

Referring particularly to the accompanying drawings, wherein is shown the preferred details of construction, the improved apparatus comprises a tank or receptacle 1 which may be of any desired size or of any particular material, being preferably however of a size to render it conveniently portable for which purpose it is provided with a bail or handle 2 of any usual or preferred form.

Within the tank 1 is slidably arranged a bell or gasometer 3 comprising a metallic body having a sectional contour corresponding to that of the tank, with exterior dimensions slightly less than the similar interior dimensions of the tank. The gasometer is open at the bottom and closed at the top by a plate 4 which plate is centrally formed with an opening 5 having an upwardly extending annular flange 6 surrounding the edge thereof. A material cage or holder 7 is secured to and depends from the plate 4, which cage comprises a metallic body of any desired sectional size and shape, and so arranged that entrance thereto may be had through the opening 5. The cage is formed in its bottom 8 and in the lower portion of its annular wall with a series of openings 9, and in said wall near the upper edge with a series of openings 10. The flange 6 is interiorly threaded to receive a cap 11, designed to close the opening 5, said cap having a depending flange 12 to thread within the flange 6 and a plate 13 to overlie the upper edge of the flange. A gas-tight connection of the cap with the flange is secured by means of a gasket 14 interposed between the plate 13 and the upper edge of the flange 6, and the cap is preferably provided with a handle 15 for convenient manipulation of the cap.

The apparatus is provided with a service pipe 16 passing through the wall of the tank near the lower end thereof and opening at its upper end within the tank. Beyond the tank the service pipe is provided with a valve 17 and with an extension 18 leading to and within a washer 19. The washer comprises any ordinary type of receptacle, such for example as a bottle or the like, designed

to be threaded into a sealing cap 20. The section 18 of the service pipe is designed to pass through and be rigidly secured to the cap 20, and by forming said section of rigid material it is obvious that the washer when in position will be, by means of the cap, removably supported in fixed relation to the tank 1. The cap is provided with an outlet pipe 21 to which any desired form of conduit, as a flexible tube 22, may be connected to lead the gas to any desired point of use.

Secured to and rising from the plate 2 of the gasometer is a measuring rod 23 designed, when the parts are assembled, to pass through an opening 24 in a cover 25 removably applied to the upper end of the tank 1. The rod 23 is graduated to indicate the quantity of gas removed from the apparatus during any particular period, the readings for which purpose are indicated by the different marks which, at such particular periods, register with the upper surface of the cover 25.

The measuring rod is formed at its upper end to receive one or more weights, being for this purpose threaded at 26 to receive a nut 27 which, when screwed to its lowest limit, forms a rest to support any desired number of weights 28 passed over the end of the rod.

In use the tank 1 is provided with the desired quantity of liquid, as at 29, the level of which must be below the upper open end of the service pipe 16. The material, as 30, designed to liberate the desired gas on contact with the liquid, is placed in the cage 7, and the cap 11 and cover 25 applied. The material in the washer, such as water, must of course seal the lower end of the service pipe therein. On opening the valve 17 the weight of the gasometer will operate to gradually express the air from the gasometer, permitting the latter to lower until the material within the cage is brought into contact with the liquid. The gas is immediately generated or liberated gradually expelling the air remaining in the bell and finally delivering a pure gas to the conduit 22.

It will be obvious that upon closing the valve 17 the gas in the gasometer will immediately elevate the same until the cage is wholly withdrawn from the liquid. The generation of gas will at once cease, so that the gas generation is automatically controlled by its use, that is so long as there is a constant outflow the gasometer will remain in such position as to keep the cage, and therefore the material therein, in the liquid, but immediately upon the cessation of such outflow the gas pressure will raise the cage free of the liquid.

As a further and important feature of the apparatus, it will be noted that the pressure of gas delivered from the gasometer is con-

stant during the period of use, as the weight of the gasometer aided by such weights 28 as may be necessary to induce a particular pressure, will constantly and uniformly affect the gas within the gasometer no matter whether such quantity be at the maximum or minimum. Therefore, practically any desired pressure of gas may be secured and this pressure held constant during the full service of the apparatus.

Upon the cessation of gas generation from lack of material it is only necessary to remove the cover 25 and the cap 11 and supply fresh material to the cage.

The apparatus is particularly designed as an oxygen generator in which of course the material 30 will be a peroxid, as barium, potassium, sodium, etc., and the liquid 29 will be water. For generating such gas the apparatus is particularly useful for emergency medical purposes, its chief characteristics being the uniform pressure of gas, the ease with which the materials may be supplied when exhausted, the automatic control by the apparatus itself of the gas generation, and the portability of the apparatus.

The materials of which the various parts are to be constructed will of course be controlled in a measure by the chemical character of the gas being generated, aside from which the materials, as well as the sizes of the various parts, may be such as best adapted for the particular apparatus.

Having thus described the invention, what is claimed as new, is:—

1. A gas generating apparatus including a tank having a removable cover, a vertically movable bell in the tank, a material cage carried by and movable with the bell, and a measuring rod carried by the bell and projecting through the cover, said rod being graduated to register with the surface line of the cover for indicating purposes.

2. A gas generating apparatus including a tank having a removable cover, a vertically movable gasometer mounted in the tank, a material cage arranged within the gasometer, and a measuring rod carried by the gasometer and projecting through and coöperating with the cover for indicating purposes, said rod being provided with removable weights to increase the pressure on the gasometer.

3. An apparatus for the generation of oxygen including a tank, a bell freely movable within the tank, a cage integral with the bell and depending within the same, the top of the bell being formed with an annular flange encircling the opening of the cage through said bell top, and a cover for the cage having threaded connection with the flange, said cage being formed near the lower end with water inlet openings and near the upper end with gas outlet openings, the cage intermediate said two sets of

openings being imperforate, whereby when the cage is submerged to cover the water inlet openings the additional pressure of the gas is directed against the top of the bell to
5 render the movement of the bell immediately sensitive and responsive to the generation of the gas.

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

GEORGE POE.

Witnesses:

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