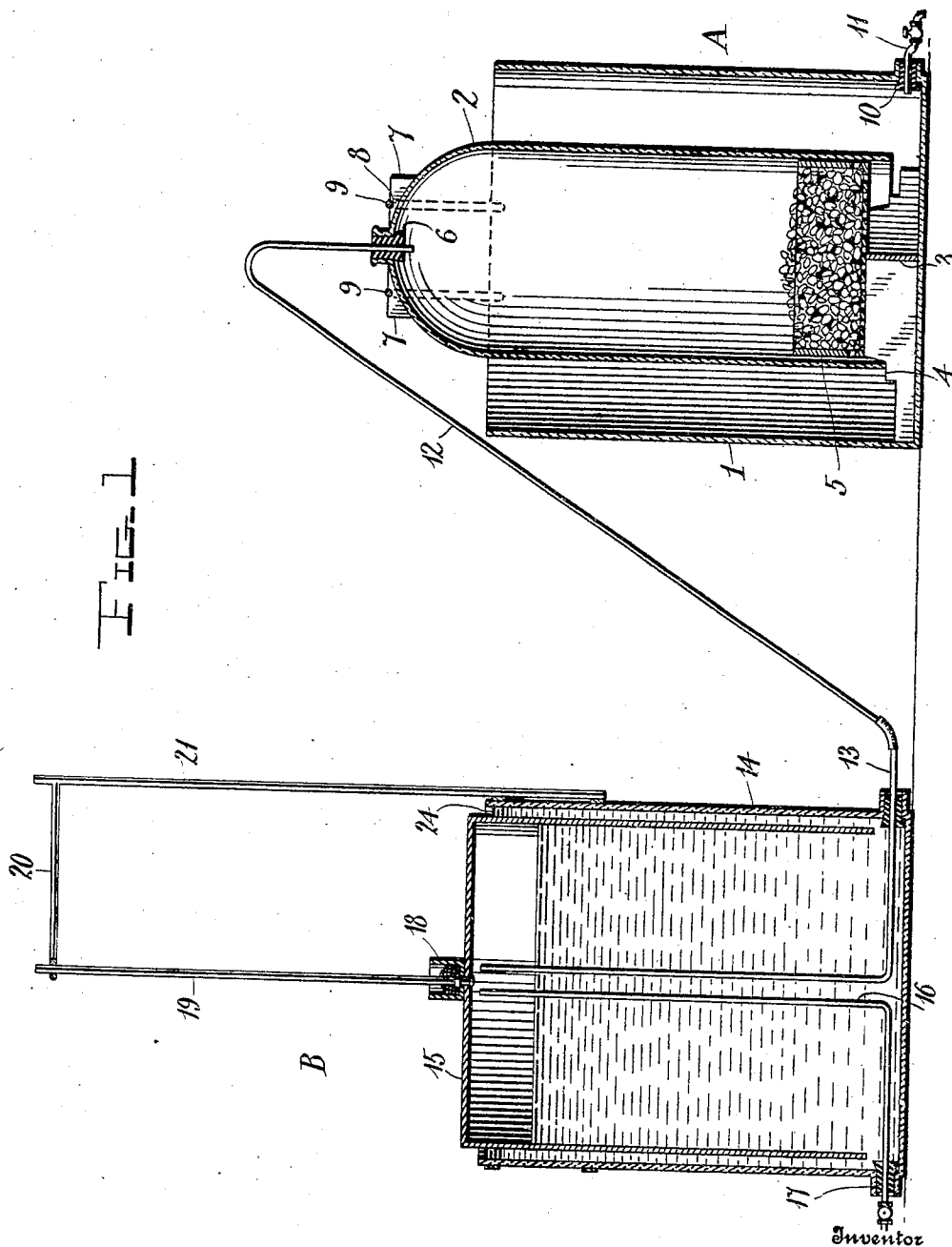


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HYDROGEN SULFID GENERATOR.
APPLICATION FILED JULY 16, 1908.

Patented Oct. 5, 1909.
2 SHEETS—SHEET 1.



Witnesses

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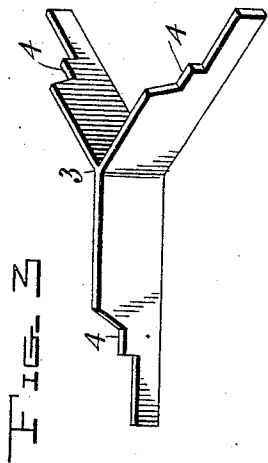


FIG. 2

FIG. 4

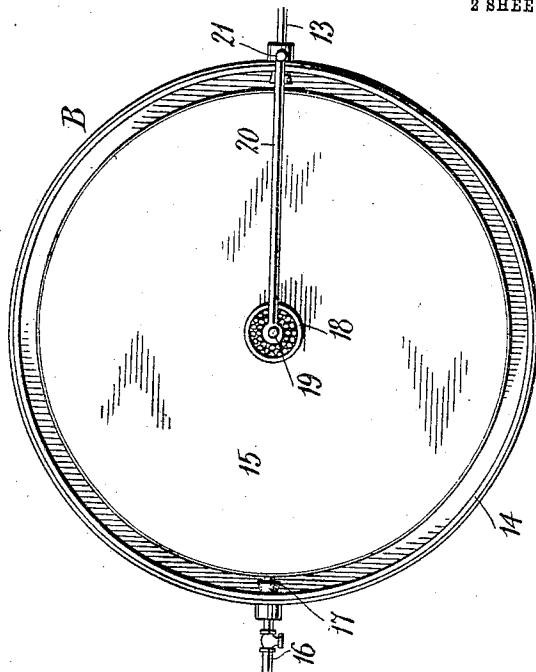
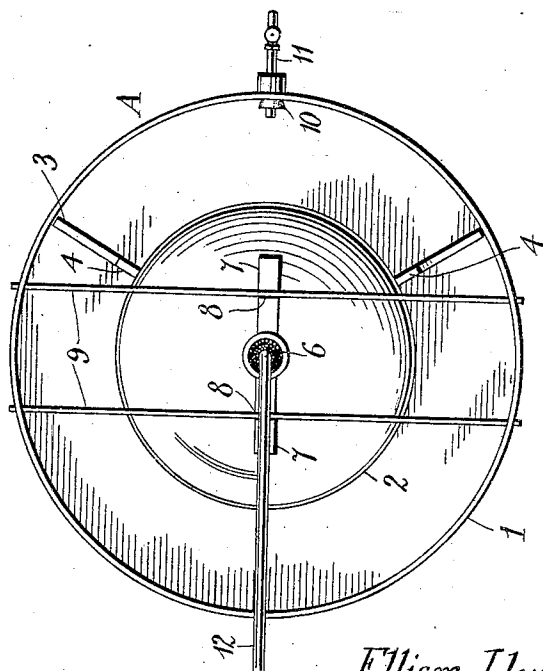


FIG. 3



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UNITED STATES PATENT OFFICE.

ELLISON L. ROSS, OF EVERETT, WASHINGTON.

HYDROGEN-SULFID GENERATOR.

936,168.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed July 15, 1908. Serial No. 443,721.

To all whom it may concern:

Be it known that I, ELLISON LLOYD ROSS, a citizen of the United States, residing at Everett, in the county of Snohomish, State of Washington, have invented certain new and useful Improvements in Hydrogen-Sulfid Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to improvements in gas generators, and it has for its principal object the production of an exceedingly simple, inexpensive and efficient device, designed primarily for use in the generation of hydrogen sulfid gas.

The invention more especially resides in the particular construction of both the basket or holder for the ferrous sulfid, and the support upon which the holder and bell-jar are mounted, and it further resides in the provision of devices for holding the bell-jar against upward movement, and in the particular form of such devices.

The preferred embodiment of the invention is illustrated in the accompanying drawings in which corresponding parts are designated by the same reference characters throughout the several views.

Of the said drawings, Figure 1 is a vertical sectional view of the complete apparatus. Fig. 2 is a plan view of the generator. Fig. 3 is a perspective view of the support. Fig. 4 is a plan view of the storage tank.

Referring more particularly to the drawings A designates generally the generator section of the apparatus, and B the storage and cooling tank.

The generator, as shown in Fig. 1, comprises a cylindrical receptacle 1 formed of glass or porcelain or other suitable material, and a bell-jar 2 disposed therewithin. The bell-jar is supported by a spider 3 which rests upon the bottom of the receptacle 1, the dimensions of the spider being slightly less than the diameter of said receptacle. Each arm of the spider has formed therein a seat 4 located intermediate the upper and lower faces thereof, said seats resulting from the cutting away of a portion of the outer ends of the arms of the spider. The bottom walls of these seats are arranged to receive the lower edge of the bell-jar which rests thereupon. The upper face of the spider is adapted to support a holder or basket 5 in

which the ferrous sulfid is placed, said basket being likewise constructed of any suitable vitreous material. The side wall of the basket is perforated adjacent its lower edge, and the bottom thereof is likewise formed with a series of perforations.

Owing to the formation of the seats 4 above referred to, it will be apparent that the lower edge of the bell-jar extends below the bottom of the basket.

At its top the bell-jar is provided with an axial opening in which a rubber cork 6 is fitted, and with a series of exteriorly located shoulders 7 each of which has its upper face notched, as indicated by the numeral 8. These notches are arranged to receive tie-wires 9 whose opposite ends are fastened to the side wall of the receptacle 1, as is shown in Fig. 1, the provision of said wires tending to hold the bell-jar in place upon the spider, and to prevent its upward movement. The receptacle 1 is in turn provided adjacent its lower edge with an opening in which is fitted a rubber cork 10, the corks 6 and 10 being fitted in their respective openings from the inside, *i. e.*, small end outward. The last-mentioned cork is formed with an axial opening through which extends a short valved drain pipe 11 whose inner end extends into the interior of the receptacle 1, while the cork 6 is provided with a similar opening in which is fitted the bent upper end of a glass tube 12 whose lower end communicates with a similar tube 13 which extends into the interior of the storage tank.

The storage tank, as shown in Fig. 1 comprises a vitreous jar 14 having opened upper ends and an aluminum bell 15 fitting loosely within said jar or shell and capable of a vertical movement under the pressure of the gas introduced therein. The pipe 13 above referred to is L-shaped as shown, its horizontal arm extending through an opening formed in the side wall of the shell 14 while its vertical arm terminates at a point slightly above the plane of the upper edge of the shell. This pipe therefore serves as an inlet pipe. The outlet pipe 16 is similar in appearance to the inlet pipe, and its vertical arm is disposed adjacent that of the inlet pipe, while its lower arm likewise extends through an opening similar to that through which the horizontal arm of said inlet pipe extends, leakage at such points being prevented by means of rubber corks 17 fitted from the inside in said openings,

said corks being provided with axial openings through which the pipe arms above referred to extend. The outer end of the horizontal arm of the outlet pipe is provided
5 with a cut-off valve of any preferred type.

The top of the bell 15 has rigidly secured thereto an exteriorly located cup 18 arranged exactly centrally thereof. The bottom of this cup has secured thereto in turn
10 the lower end of a vertical metal wire 19 whose upper end projects loosely through an eye formed in the outer end of a horizontal rod 20 carried by a second vertical rod 21, the last-mentioned rod being rigidly
15 connected at its lower end to a metal band or bands which embrace the upper portion of the shell 14 and are fastened thereto. The cup 18 is designed to be weighted in any manner, preferably by the introduction
20 of shot thereinto.

The operation of the apparatus as a whole may be described as follows. The basket 5 is filled with ferrous sulfid in lumps, after which it is placed upon the upper face of
25 the spider and inclosed by the bell-jar 2 whose lower edge or mouth rests upon the bottom wall of the seats 4. Hydrochloric acid is then poured between the bell-jar and the receptacle, after said bell-jar has been
30 fastened in place by the tie-wires 9. Pressure within the bell-jar is then relieved, allowing the acid to rise in the bell-jar into contact with the ferrous sulfid, whereupon
35 the generation of the hydrogen sulfid gas will commence, the acid flowing through the perforations in the basket, as will be apparent. The gas generated will flow through the tube 12 and the inlet tube 13 into the interior of the bell 15, which latter is partially
40 filled by the water previously poured into the shell 14. When the pressure of the gas in the upper portion of the bell 15 is suffi-

ciently great to overcome the pressure of the weights within the cup 18, said bell will rise, being guided in its movements by the pas-
45 sage of the rod 19 through the eye end of the rod 20 which latter, as stated, is formed upon the rod 21. The gas may be drawn off from the bell through the outlet pipe 16, it being
50 apparent that its pressure will be maintained approximately constant owing to the provision of the weighted cup, such pressure being determined by the weights disposed therewithin.

Evaporation of the gas from the water is
55 prevented by a liquid seal 24 formed by pouring a layer of mediumly heavy oil upon the water between the walls of the shell and bell.

What is claimed is:

A gas generator, comprising in combina-
60 tion, a liquid receptacle having an open top; a spider disposed within the receptacle and arranged to rest upon the bottom thereof; a bell-jar disposed within said receptacle and
65 supported solely by the arms of the spider, said bell-jar being provided at its upper end with exteriorly-located shoulders; tie wires extending across the open top of the recep-
70 tacle and having their ends fastened to the wall thereof, said wires being engaged with the shoulders on the bell-jar, to hold the latter against upward movement; and a perforated basket disposed within the bell-jar and
75 supported solely upon the upper face of the spider, said basket having its bottom disposed above the lower edge of the bell-jar.

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

ELLISON L. ROSS.

Witnesses:

R. B. COLEMAN,
LUCY ANDERSON.