E. M. HOOVER.

GAS GENERATOR.

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996,716.

Patented July 4, 1911.

Fig. 1.

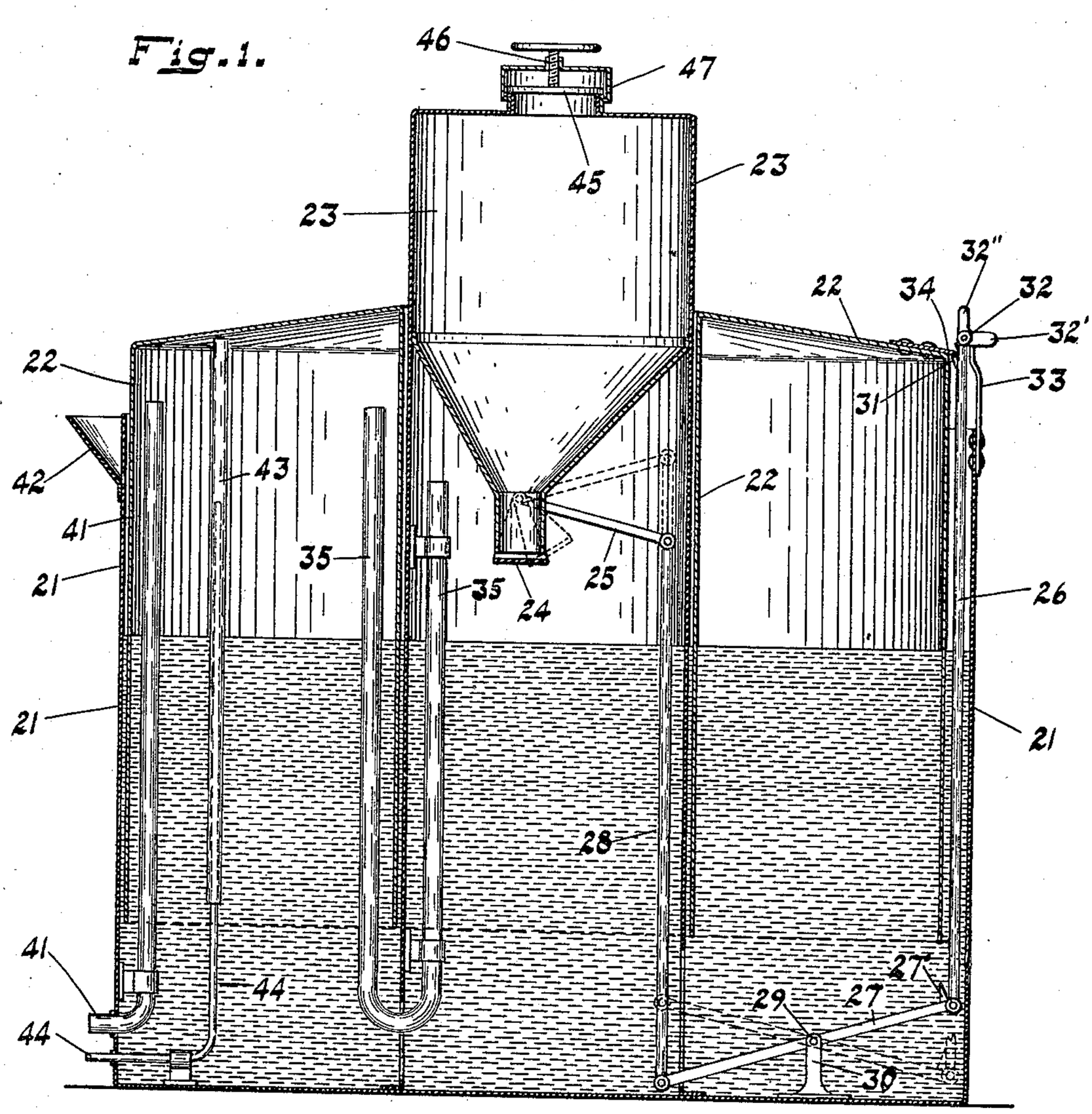

Fig. 3.

Fig. 2.

Witnesses

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EDWARD M. HOOVER, OF LAPEL, INDIANA.

GAS-GENERATOR.

996,716. Specification of Letters Patent. Patented July 4, 1911.

Application filed February 28, 1910. Serial No. 546,472.

To all whom it may concern:

Be it known that I, EDWARD M. HOOVER, a citizen of the United States, residing at Lapel, in the county of Madison and State of Indiana, have invented a new and useful Gas-Generator, of which the following is a specification.

The object of my present invention is to provide an apparatus by means of which gas may be generated as required, and the generation automatically suspended as the supply reaches a predetermined point, and be automatically resumed as the supply decreases beyond the predetermined point.

An apparatus embodying my said invention will be first described and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar reference characters indicate similar parts, Figure 1 is a central vertical sectional view of an apparatus of the character in question embodying my said invention; Fig. 2 a detail sectional view showing another position of some of the parts, and Fig. 3 a similar view showing still another position.

The main tank 21 is stationary, and contains a supply of water. Within it is arranged a gas holder 22, which is adapted to rise and fall as the supply of gas is increased or decreased.

Above the gas generator is arranged a receptacle 23 for the material for producing the gas, usually calcium carbid, this receptacle being in a position to discharge downwardly, the mouth or discharge orifice being at the under side and extending to within the gas holder. This mouth or discharge orifice is provided with a valve 24, which is controlled by a lever 25, and which is adapted to be operated to be opened and closed by the ascent and descent of the gas holder, as will be presently explained. The side walls of the structure which embodies the gas-material receptacle 23 are shown as extending to the bottom of the main tank 21, and supported thereby in stationary position.

The gas holder 22 is in the form of an annular chamber surrounding the structure 23, and is situated within the walls of main tank 21. The upper side of tank 21 is open and its lower side is closed, as is common in gas tanks of ordinary design.

At one side of gas tank 22 within a recess between the adjacent walls of said tank and the main tank 21, a rod 26 is positioned, the lower end of which is connected by means of lever 27 and link 28 with the lever 25 which controls valve 24. Lever 27 is shown as pivoted at 29 in a suitable stand 30, and is provided with a stop 27′, which, when the rod 26 is in its lowermost position will come in contact with the side of said rod, and thus first cause said rod to move slightly sidewise so that projection 31 will be disengaged from point 34 and then prevent the latter from further movement, as said stop 27′ operates as an abutment against which rod 26 will bear and its movement be thus stopped, the action being similar to that of a "rule-joint" in this particular. The rod 26 is provided near its upper end with a projection 31, and also carries upon said upper end a shifting catch 32 in the form of a bell-crank lever. Secured to the wall of tank 21 adjacent to rod 26 is a cam arm 33.

The operation of these several parts is as follows: Assuming the parts to be in the position indicated by Fig. 1, (where the gas holder contains gas enough to hold it above the projection 31 when rod 26 is in its upper position and valve 24 is thereby closed) the gas holder 22, as it descends, will through a trip 34 thereon, engage with projection 31 and force rod 26 downwardly. The cam arm 33 being in the path of that arm 32′ of the shifting catch which is at the time in a horizontal position, will tip said catch from the position shown in Fig. 1 to the position shown in Fig. 2. The further descent of the gas holder will carry the rod 26 to the position shown in Fig. 3, and the parts connected thereto to the position shown in dotted lines in Fig. 1. As the parts reach this position, the projection 27′, besides acting as a stop, will also serve to push the rod 26 slightly to one side, as indicated in Fig. 3, throwing the projection 31 thereon out of the path of projection 34 of the gas holder, this being permitted because of the fact that the catch 32 has by this time passed below the overhanging portion of the cam arm 33, as also shown by Fig. 3. The opening of valve 24 consequent upon this movement permits a quantity of the gas generating material to descend through the mouth of the receptacle into the water below, whereupon the generation of gas immediately begins. The gas as it is generated, flows through the inverted siphon-like tube 35 into the gas

holder; and, when sufficient gas has been generated to cause the gas holder to rise, projection 34 engages with the arm 32″ of the catch 32. The first effect is to move said catch and the rod 26 to which it is attached upwardly. When the upward movement has continued until the catch has passed the upper end of cam arm 33, then the catch will be returned to the position shown in Fig. 1, and there remain until after the gas generated by the operation has been exhausted, and the gas holder again descends, when the operation is repeated. The gas emerges as it is desired for use through pipe 41. Water is supplied when needed through a funnel shaped inlet 42. A pipe 43 having an open lower end is carried by the gas holder 22, and said lower end normally extends below the surface of the water in tank 21. A pipe 44, also open-ended, extends in through the side of tank 21 and thence up inside of pipe 43 to a point above the normal water line. The result is, should gas holder 22 be raised beyond the predetermined point, that the lower end of pipe 43 would be raised out of the water, thus permitting gas to escape through said pipe and pipe 44, and thus relieve the apparatus from an undue quantity of gas or too great pressure. The receptacle 23 is re-charged through the mouth in the upper side which is closed by a cover 45, and this cover is shown as being kept tightly closed when the apparatus is in use by a screw clamp 46 carried in a suitable housing 47.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in an automatic gas generator, of a tank, a gas-material receptacle, a gas holder, a valve to the discharge orifice of the gas-material receptacle, a cam arm secured to the wall of the main tank, an operating point on the gas holder, a rod passing therebetween and having a shifting catch on the upper end thereof and a projection near said upper end, and connections leading from said rod to the valve for the gas-material receptacle.

2. The combination, in an automatic gas generator, of a main water tank, a floatable bell mounted therein, a gas-material receptacle arranged to deliver into the water tank, a valve controlling the flow of material from said receptacle, an operating member connected with said valve, and interengaging means between said operating member and bell for operating the valve by the vertical movement of the bell, said means comprising an automatically withdrawable and returnable detent automatically projected into engaging position by downward movement of the bell and automatically retracted by upward movement of the bell in excess of the movement of the operating member sufficient to close the receptacle valve, whereby initial upward movement of the bell from its lower position will first close the receptacle valve and thereafter cause retraction of said detent to permit further upward movement of the bell independent of the valve operating member.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this twenty-fourth day of February, A. D. one thousand nine hundred and ten.

EDWARD M. HOOVER. [L. S.]

Witnesses:

CHESTER BRADFORD,

THOMAS W. MCMEANS.