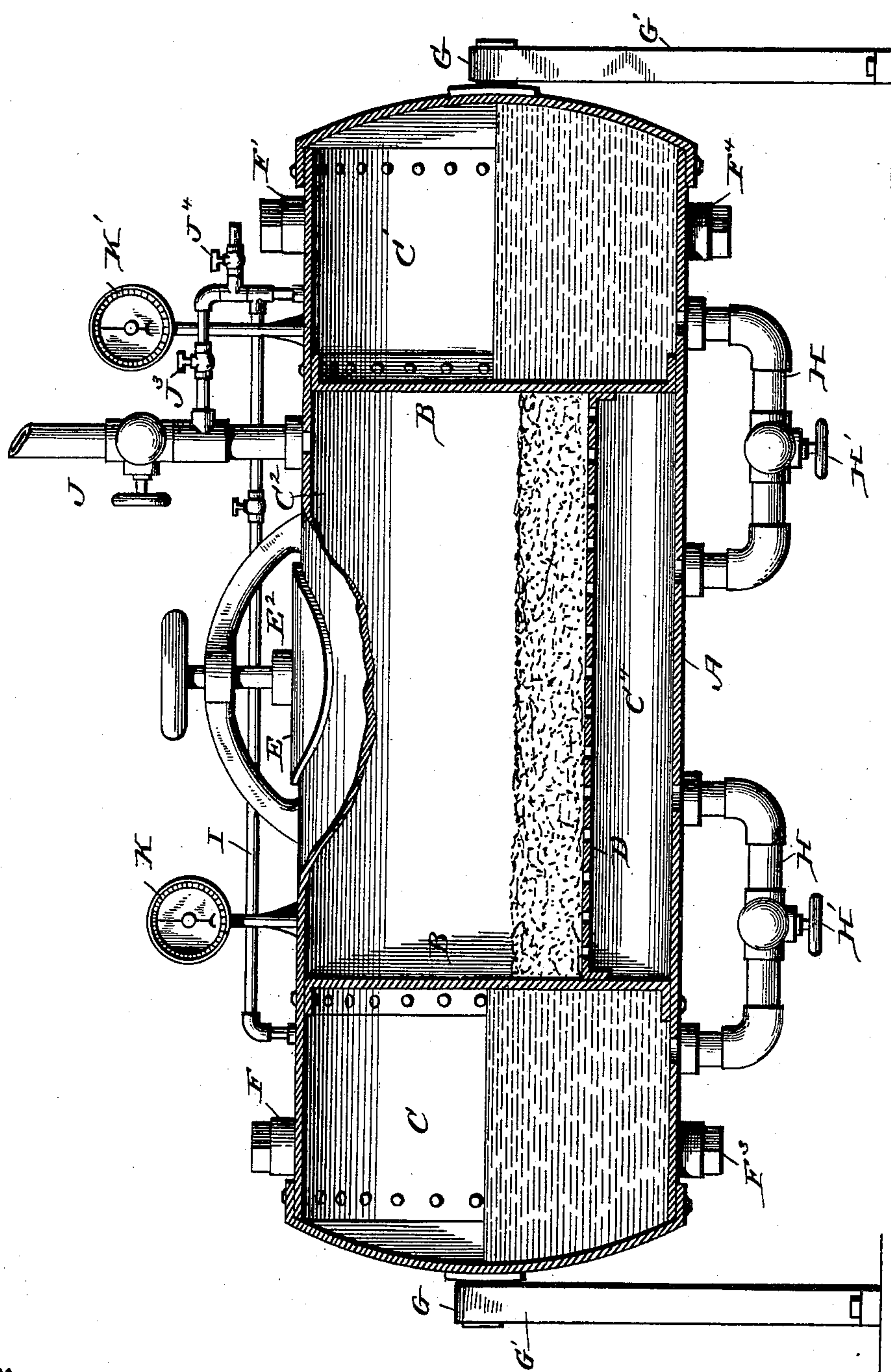


(No Model.)

W. F. SINGER.
AUTOMATIC GAS GENERATING MACHINE.

No. 459,712.

Patented Sept. 15, 1891.



Witnesses

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WILLIAM F. SINGER, OF CARTHAGE, ASSIGNOR OF ONE-HALF TO GILBERT L. HAVILAND, OF SYRACUSE, NEW YORK.

AUTOMATIC GAS-GENERATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 459,712, dated September 15, 1891.

Application filed November 13, 1890. Serial No. 371,327. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. SINGER, a citizen of the United States, residing at Carthage, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Automatic Gas-Generating Machines; and I do 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, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which forms a part of this specification.

This invention relates to certain new and useful improvements in automatic gas-generators; and it has for its object to generally improve upon the construction of this class of devices and to provide a means whereby gas may be automatically generated under varying degrees of pressure, as may be desired, the apparatus being especially adapted for generating gas under high degrees of pressure.

To these ends and to such others as the invention may pertain, the same consists in the peculiar construction and in the novel combination, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawing, and then specifically defined in the appended claim.

The invention is clearly illustrated in the accompanying drawing, in which I have shown a central vertical longitudinal section through a gas-generating machine constructed in accordance with my invention.

Reference now being had to the details of the invention by letters of reference, A designates a substantially constructed cylinder of copper or other suitable metal. The interior of the cylinder A is divided by means of suitable partitions B B into three compartments C, C', and C², the end compartments C and C' each occupying substantially one-fourth of the length of the cylinder. The central compartment C² is divided by means of a perforated metallic plate D, which extends horizontally through the said central compartment into two compartments C³ and C⁴, the upper compartment C³ being of greater size than the lower compartment.

A suitable hand-hole E, having a cover E², is provided, whereby access is permitted to the chamber C³ when it may be desired to fill the same or remove its contents, and suitable filling apertures F and F' serve to permit the filling of the end compartments C and C', while the outlets F³ and F⁴ serve to permit the contents of the said chambers or compartments to be withdrawn, as will be readily understood.

Extending from the ends of the cylinder A are the stub-shafts G, which are journaled within the upper ends of the standards G'. The pipes H, provided with valves, connect the end compartments C' and C² with the compartment C⁴, as shown. A pipe I leads from the upper portion of the chamber or compartment C to the upper part of the compartment C', and said pipe I is connected with the pressure-supply pipe J by the pipe J², which pipe is provided with a suitable valve J³, and a suitable blow-off valve J⁴ is provided, whereby an excess of pressure may be overcome, when necessary, as will presently appear. Suitable gages K and K', connected with the compartments C³ and C', respectively, serve to at all times indicate the degree of gas-pressure within the said compartments.

In operation the bicarbonate of soda or other material used for the purpose of generating the gas is placed within the compartment C³ and rests upon the perforated plate or bottom D. A quantity of acid (usually sulphuric) is placed within each of the compartments C and C'. The acid is then admitted to the compartment C⁴ by the opening of the valves H', and, passing through the holes in the plate D, attacks the bicarbonate of soda or other material of which the charge is composed, and, owing to the large area of surface over which the charge is spread, a large volume of gas is quickly generated. When the amount of gas generated exceeds the amount required, the pressure within the chamber C³ will rise sufficiently to force the acid back within the chambers C and C'; but should a higher pressure of gas be required for any reason the valve J³ may be opened and the gas admitted to the compartments C

and C', where the pressure of the gas upon the acid contained within said compartments will counterbalance the pressure within the compartment C³, and will thus serve to prevent the acid from returning to the compartments C and C', and it will be readily understood that the pressure of gas within the said compartments may be readily lessened by opening the blow-off valve J⁴, thus allowing the acid to return to the chambers C and C' by reason of the accumulated pressure within the chamber C³. It will be seen that the pressure within the respective chambers will be at all times indicated by the gages K and K' and that the pressure will at all times be automatically maintained within the chamber C³, for as the gas is exhausted from the said chamber through the supply-pipe J, leading therefrom, the pressure within the compartments C and C' will cause a return of the acid to the charge within the chamber C³, thus automatically renewing the supply of gas and maintaining an even pressure at all times.

Having thus described my invention, what I

claim to be new, and desire to secure by Letters Patent, is—

In a gas-generating machine, a cylinder provided with imperforate transverse partitions B B, dividing the same into three compartments, the perforated plate D within the central compartment, dividing the same into two unequal parts and secured to the partitions B B, the valved pipes H H, leading from the end compartments into the smaller of the central compartments, the valved pipe J, communicating with the upper central compartment, and the pipe I, connecting the upper part of the end compartments and having separate connection with the pipe, said connection having valve J³ and blow-off valve J⁴, all substantially as shown, and for the purposes specified.

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

WILLIAM F. SINGER.

Witnesses:

FRANKLIN H. HOUGH,
EDWARD H. WILSON.