W. HOELLER.

GAS GENERATOR.

APPLICATION FILED DEC. 13, 1911.

1,037,481. Patented Sept. 3, 1912.

FIG. 1.

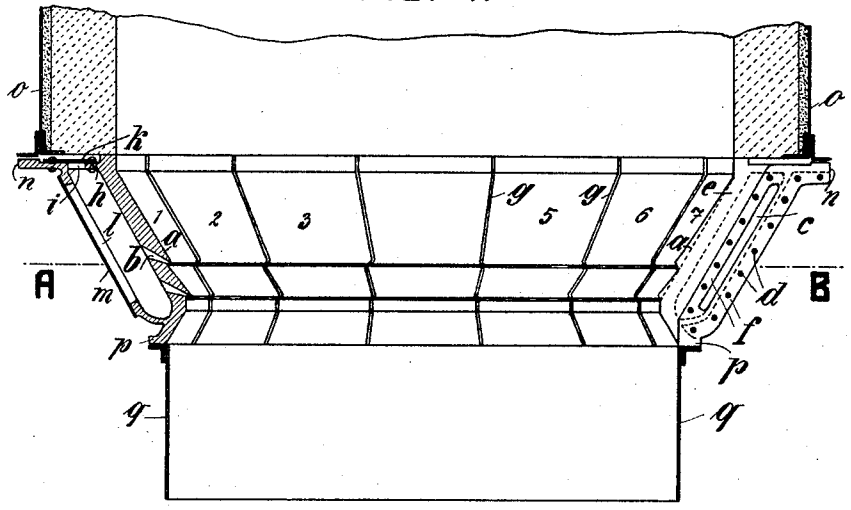
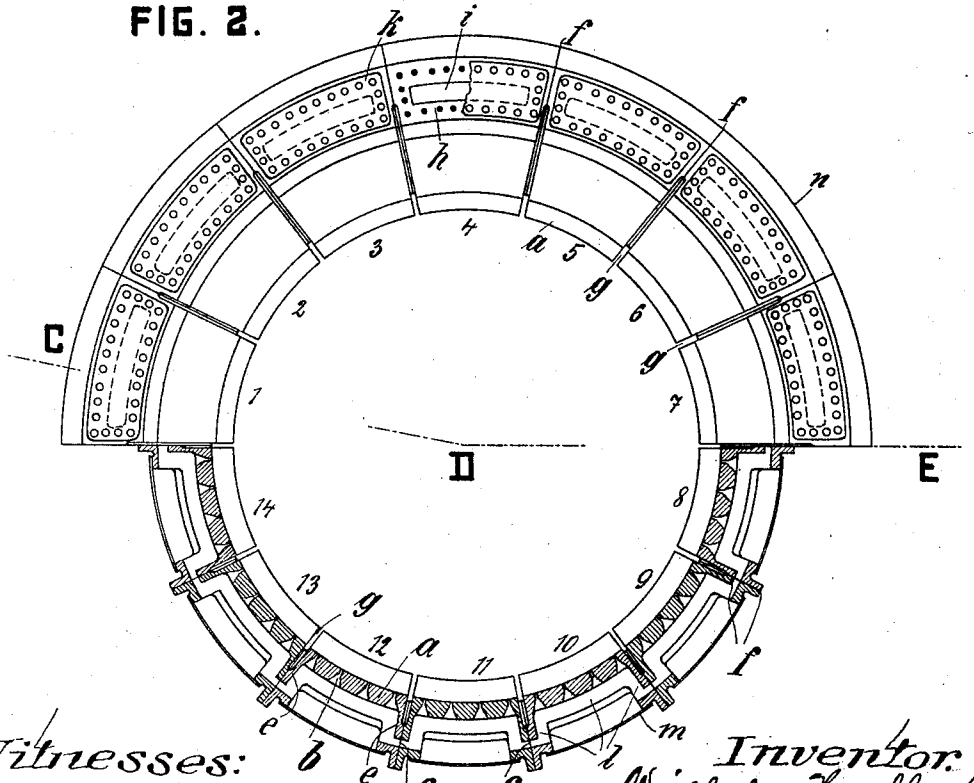


FIG. 2.



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UNITED STATES PATENT OFFICE.

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GAS-GENERATOR.

1,037,481. Specification of Letters Patent. Patented Sept. 3, 1912.

Application filed December 13, 1911. Serial No. 665,544.

To all whom it may concern:

Be it known that I, WILHELM HOELLER, a German subject, residing at No. 42 Förster-strasse, Cologne-Ehrenfeld, Germany, have invented new and useful Improvements in Gas-Generators, of which the following is a specification.

My invention relates to gas generators, and more particularly to the means for supplying air thereto or for cooling the generator by steam. These means, in order to effectually perform their office, are to be arranged in the fire zone of the generator, and from this requirement most of the inconveniences result which adhere to the known constructions of this kind. It has been proposed to provide a single hollow ring made of cast iron; but it has been found that the tensions to which the wall of such a hollow ring is subjected cause the latter to break so as to allow a large amount of steam, or in the case of circumferential air-supply allow wind, to escape at such places, which has a detrimental effect on the action of the generator. Such devices being required to consist of cast iron, at least as to the inner wall thereof, which is acted upon by the fire, it has been proposed, in order to avoid the inconvenience stated, to employ the following construction: For forming the hollow ring the outer sheet metal case of the generator is used; the horizontal walls are constituted by sheet metal rings riveted to this case, while the inner wall, subjected to the action of the fire, is composed of strong segment plates made of cast iron. Also this arrangement presents the disadvantage that leakages are brought about during working, because the segment plates, placed together without any packing screwed or otherwise secured thereto, will present many open interstices through which the wind constantly escapes in a disadvantageous manner. Rendering these plates air-tight by screws uniting them at the inner wall equally gives but little security for a tight connection being insured, because this wall is heated to red heat and the connection of the plates thus loosened. Both these constructions besides present the disadvantage that interchangeability cannot be effected without interruption of working.

The present invention is to avoid all these inconveniences, *i. e.* leakages due to the joints becoming loose as well as the breaking of the walls, and finally the fact that interchangeability is not possible without interruption of working.

The drawing shows a form of construction embodying my improvements, Figure 1 on the left-hand side being a vertical section on the line C D of Fig. 2 and on the right-hand side a vertical section on the line D E of Fig. 2. Fig. 2 in its upper half is a plan view, while in its lower half it is a section on the line A B of Fig. 1.

The device is composed of a number of segment cases made of cast iron, denoted by the numerals of reference 1–14. The inner wall *a* in case the device is to serve as a circumferential air supply is provided with nozzles *b* through which the steam mixture is conducted into the fuel of the generator. The device is essentially of the same construction if designed to be employed as a mantel piece to be cooled by steam, the sole difference being that the nozzles *b* are absent because the inner wall *a* in the latter case only serves to prevent, by cooling by means of steam, deposits of slacks. This difference, however, has no relation to the essential features of the invention. Each of the segment cases 1–14 is closed on all sides, it only communicating with the adjacent cases by slits *c*. The cases 1–14 are tightly connected with each other by screws *d* fitted around the slits *c*. This joint between each two cases is remote from the inner wall *a* subjected to the action of high temperatures, that is to say, is arranged outside, and is constantly cooled by the steam or the mixture of steam and wind, respectively, so that the joint cannot become loose under the influence of high temperatures.

As already mentioned it is of great advantage to make the inner wall *a*, which is located in the fire, of cast iron. In order to avoid joints in this wall the latter with the adjoining walls is cast in a mold. Owing to the great increase of temperature which the inner wall *a* undergoes over the outer parts certain tensions arise in all the said walls. According to the present invention such tensions are rendered ineffectual in the following manner: By ribs integral with the outer surface of the vertical walls *e* and provided at the joint surfaces *f* connected by the screws *d* there are provided between the cases 1–14 slots *g* located in the interior of the generator. These slots allow the inner wall *a* to expand cir-

cumferentially under the action of high temperatures. The joints *f* are not affected by such expansion, because the vertical walls *e*, adjoining the wall *a*, are resilient to a certain degree owing to their small thickness, this resiliency still exceeding the little expansion of the wall *a*. The slots *g* are filled out with asbestos, which is an elastic and fireproof material and allows the inner wall *a* to expand while at the same time preventing slacks from entering the slots *g*. Also the other walls are protected from the action of the tensions that may arise in them. The upper horizontal wall *h* has a longitudinal slit *i* which is tightly and fixedly closed by the elastic sheet metal plate *k*. The latter neutralizes the tensions that may arise in that wall. In the vertical walls *e* of the segment cases this is effected by the slits *c* which at the same time provide a passage for the steam or the wind, respectively; the outer back wall *l* of each case is protected from the action of tensions by means of an elastic sheet metal plate *m*. By this construction the cast iron walls are prevented from breaking and thus from becoming untight.

By removing the plates *m*, which during working tightly close the segment cases outside, access may be had to that portion of the screws *d* which lies within the cases; and as also the flange *n*, connecting the individual cases with the outer casing *o* of the generator, and the flange *p*, attaching such cases to the diving ring *q*, are immediately accessible from without, the present invention enables each of the said cases to be readily interchanged from without during the usual pauses of working, that is, without interruption of working.

The present invention thus insures the following advantages:

(1) The joints are not liable to become untight by getting loose.

(2) Leakages due to the ordinary hollow rings breaking are prevented.

(3) The individual parts can be readily interchanged from without and without losing time.

It is to be understood that changes in the form, proportion, size, and the minor details may be made without departing from the spirit or sacrificing any of the advantages of this invention.

What I claim is:

1. In a gas generator a hollow ring located in the fire zone and composed of a number of segment cases constructed to be interchanged from without, the joints of such cases being remote from the inner wall, which is subjected to high temperatures, and the said joints being continuously cooled, so that loosening, due to the heat, is prevented, substantially as and for the purpose set forth.

2. In a gas generator a hollow ring located in the fire zone and composed of a number of segment cases constructed to be interchanged from without, the individual walls of these cases having slots to neutralize tensions in the said ring, substantially as set forth.

3. In a gas generator a hollow ring located in the fire zone and composed of a number of segment cases constructed to be interchanged from without, the individual walls of these cases having recesses, and elastic plates covering such recesses, in order to neutralize tensions in the said ring, substantially as set forth.

In witness whereof I have hereunto signed my name this 27th day of November 1911, in presence of two subscribing witnesses.

WILHELM HOELLER.

Witnesses:
NICOLAS HAHN,
ANIS VANDORY.