

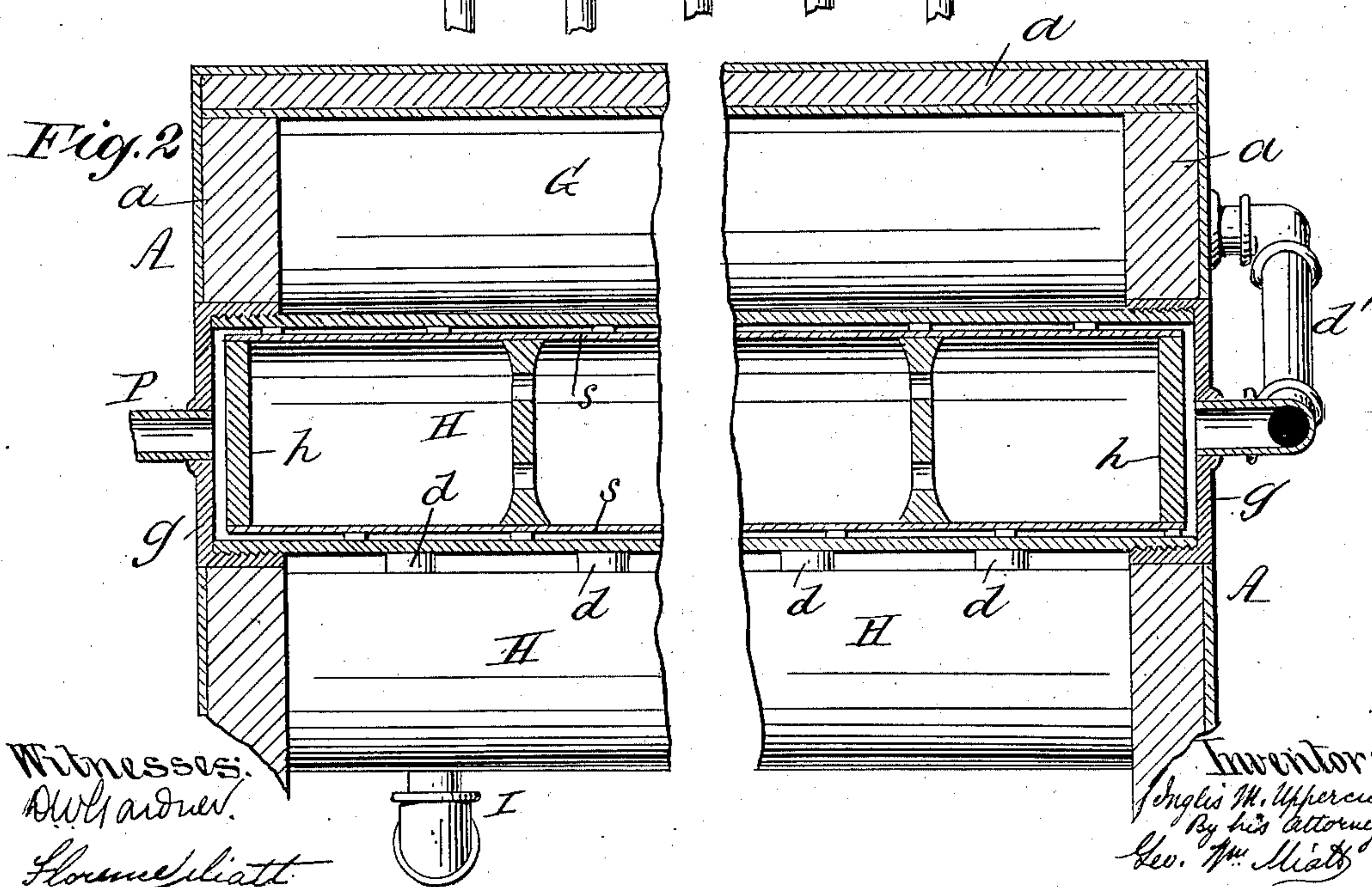
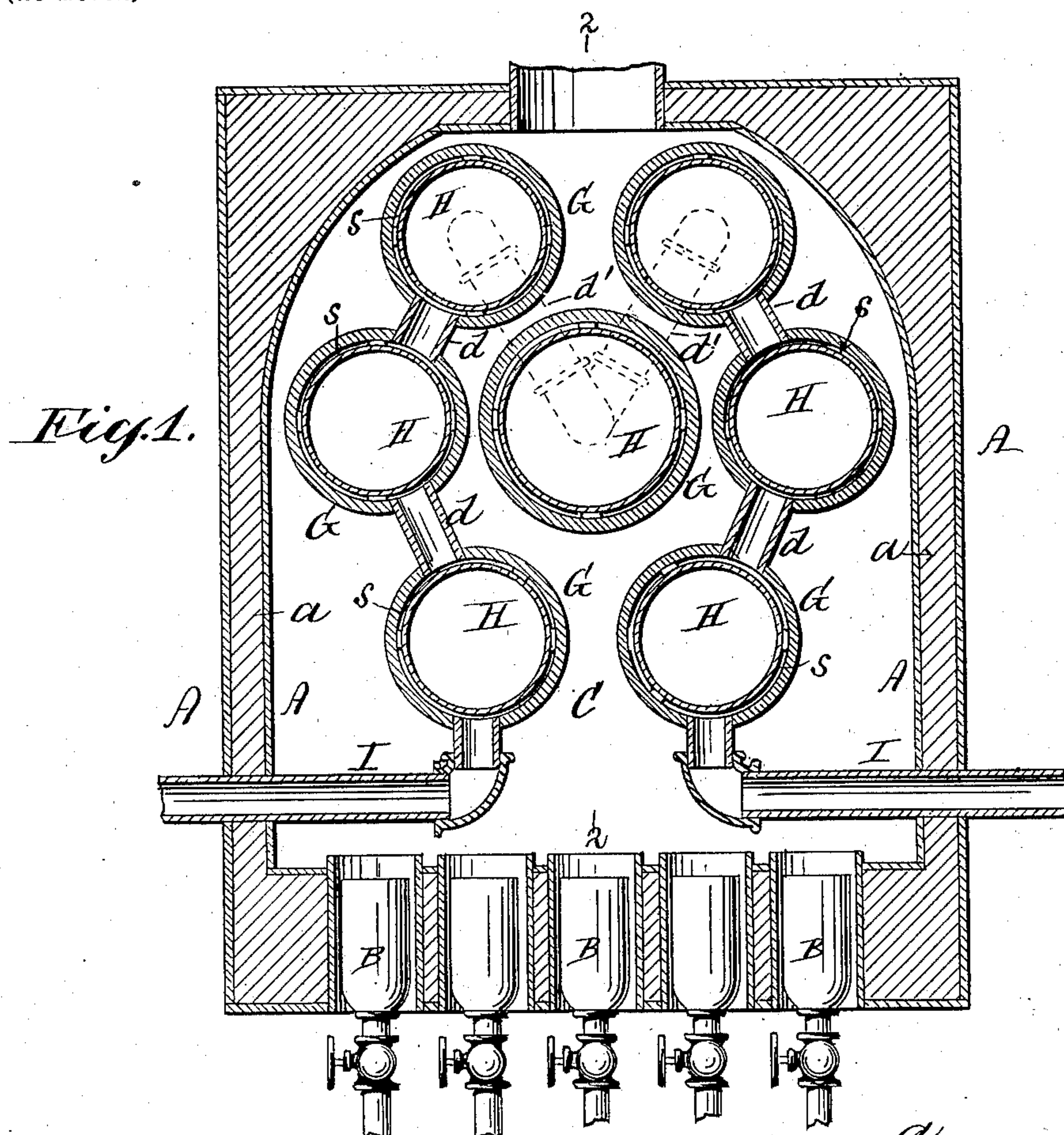
No. 653,126.

Patented July 3, 1900.

I. M. UPPERCU.  
PRESSURE GENERATOR.

(Application filed Feb. 12, 1900.)

(No Model.)



Witnesses:  
Dwight  
Florence Elliott

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# UNITED STATES PATENT OFFICE.

INGLIS M. UPPERCU, OF NEWARK, NEW JERSEY.

## PRESSURE-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 653,126, dated July 3, 1900.

Application filed February 12, 1900. Serial No. 4,860. (No model.)

*To all whom it may concern:*

Be it known that I, INGLIS M. UPPERCU, a citizen of the United States, residing in the city of Newark, in Essex county and State of New Jersey, have invented certain new and useful Improvements in Pressure-Generators, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates to means for quickly attaining a relatively-high degree of pressure in the generation of steam or other gaseous medium for the transmission of power or heat.

My invention consists, primarily, in a pressure-generator tube having an internal hollow vacuum tube or core which creates an annular space immediately adjoining the inner surface of the generator-tube, so that a high degree of heat may be imparted to the liquid or vapor in a comparatively-short time, the vacuum in the central tube or core rendering the same collapsible in case of excess of pressure and also rendering the interior thereof non-conducting to heat, so that the heat that would otherwise pass through it is deflected into the liquid or gas in the said annular space, and, secondarily, in the special arrangement of parts hereinafter set forth.

In the accompanying drawings, Figure 1 is a vertical section of the essential parts of apparatus embodying my invention. Fig. 2 is a section upon plane of line 2 2, Fig. 1.

A represents a casing or furnace the walls, &c., of which are packed with asbestos *a* or other non-conducting material. At the bottom of this furnace is situated means for supplying a high degree of heat to the chamber C, formed by the walls or casing A. By way of illustration I have in the drawings indicated a series of burners B B, although any other suitable form of heating device may be substituted therefor with like result, and I do not limit myself in this respect.

G G represents a series of generator-tubes. One or more of these pressure-generating tubes may be employed, according to the requirements of the special use to which the device is to be applied. Where only one is used, the inlet or supply pipe enters at or near one extremity, while the discharge-pipe is connected at or near the other extremity. Where

a plurality of pressure-generating tubes G G are used, they are coupled together successively by conduits *d d*. Thus in the drawings seven generator-tubes are shown as arranged in the heating-chamber C, the lower ones on either side being connected with inlet-pipes I I and by conduits *d d* with the generating-tubes next above, which are in turn connected by conduits *d d* with the upper generating-tubes, both of which are connected by conduits *d' d'* with a central tube, with which the pressure or discharge pipe P communicates.

Each generator-tube G is provided with a sealed hollow core H of slightly-less diameter than the internal diameter of the generator-tube, and is supported therein in such manner as to create thereon an annular space *s* for the passage of the liquid or gaseous medium to be employed. By thus restricting the area of the generator-tube I force the fluid or gas into immediate contact with its inner surface, which is highly heated by reason of the direct exposure of its outer surface to the intense heat in the chamber C. By this means the generation of a high degree of pressure may be effected almost instantaneously and maintained indefinitely.

The hollow cores H are sealed in any appropriate manner, as by the heads *h h* shown at each end in the drawings or by any other mechanical expedient. The air is exhausted from them, so as to create a partial vacuum therein for the double purpose of rendering the interior non-conductive to heat and of rendering them collapsible in case of excessive pressure, thereby relieving the strain upon the generator-tube and preventing its rupture. For the same reason the core-tube H is made much thinner and weaker than the generator-tube G. By rendering the interior of the core non-conductive I deflect the heat that would otherwise pass through it and direct it into the annular spaces *s*.

The ends of the generator-tubes G G are closed by screw-caps *g g* or equivalent means, so that one or both ends can be readily opened and the core removed for the purpose of facilitating the cleaning of the internal surface of the one and the external surface of the other.

It will be seen that the device is simple in



construction, though strong, accessible for cleaning, &c., and non-explosive, and that by its use a comparatively-small quantity of fluid or gas may be exposed directly to a relatively-  
5 large heating-surface.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a pressure-generator of the class designated, the combination of a series of generating-tubes connected successively one  
10 with the other by suitable conduits, each generating-tube having a sealed hollow vacuum tube or core located therein, an inlet-pipe connected with the first generating-tube of  
15 the series and an outlet-pipe connected with

the last generating-tube of the series, and means for heating said series of generator-tubes externally for the purpose set forth.

2. In a pressure-generator of the class designated, the combination of a generating-  
20 tube having an inlet-pipe and an outlet-pipe, a vacuum-tube in said generating-tube forming a core, and means for heating the exterior of said generating-tube, for the purpose set forth.

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Witnesses:

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