

(No Model.)

2 Sheets—Sheet 1.

A. STEIN.  
GAS GENERATOR.

No. 283,297.

Patented Aug. 14, 1883.

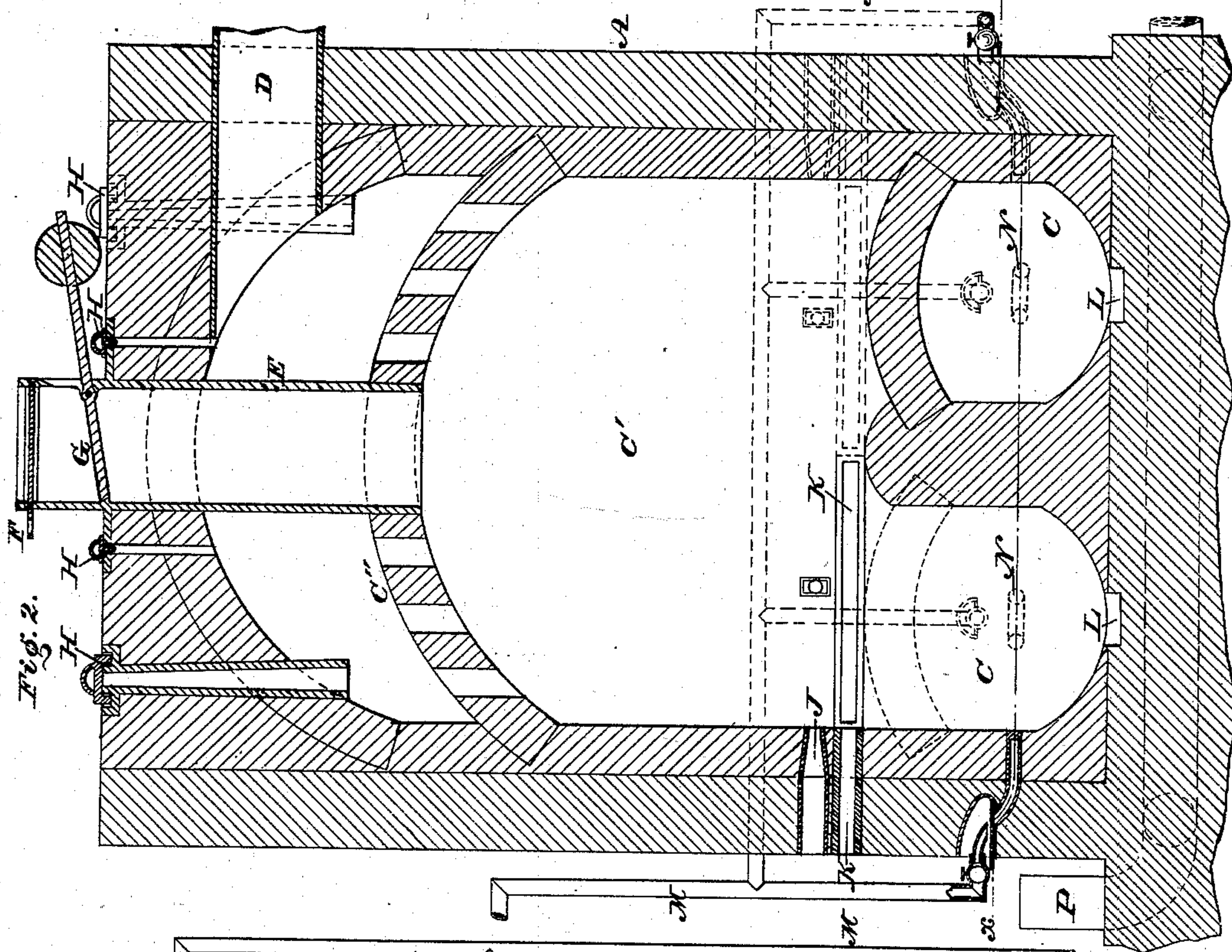
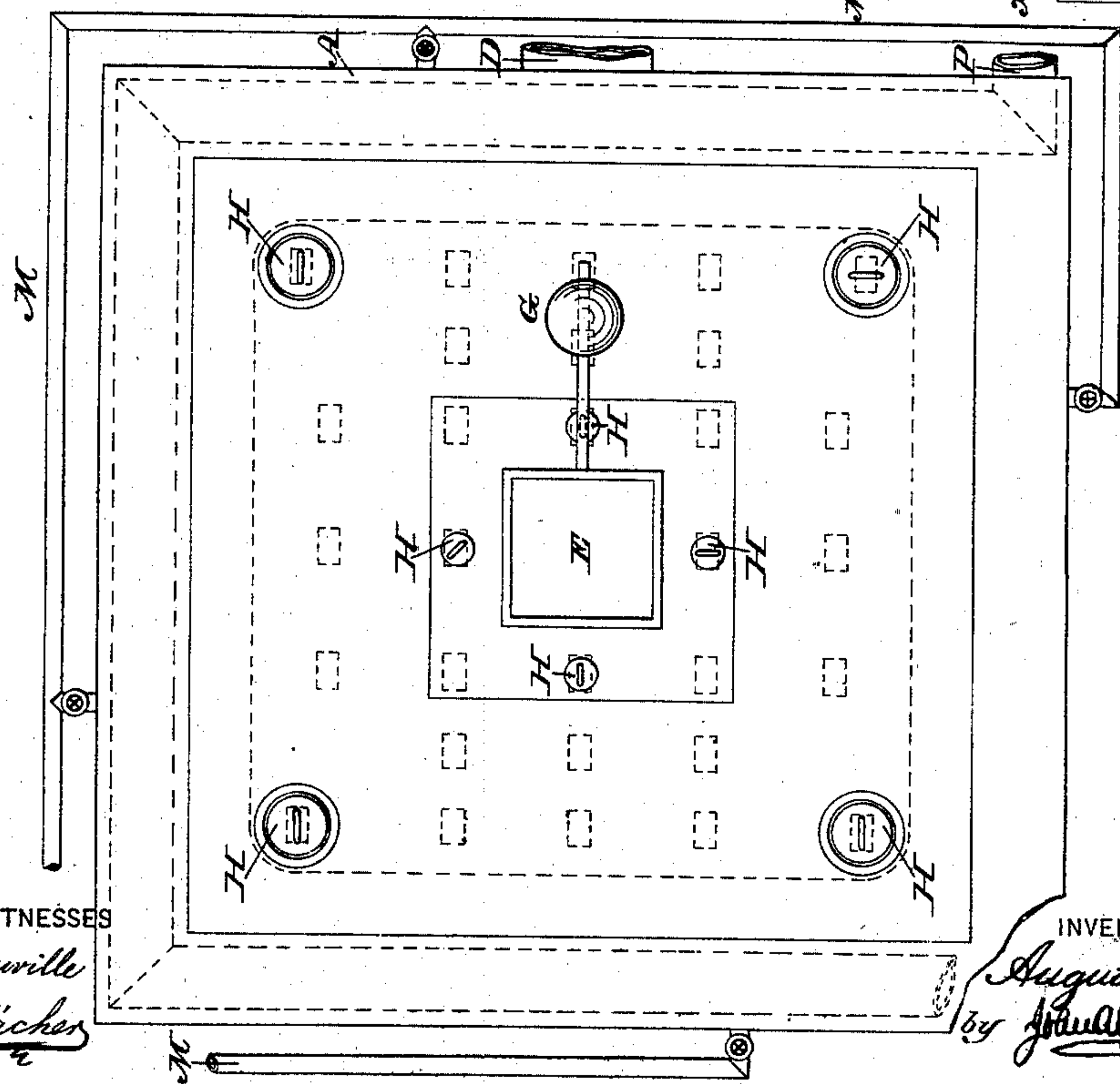


Fig. 1.



WITNESSES  
L. Douville  
H. F. Fischer

INVENTOR:

August Stein,  
by John A. Giedensheim  
ATTORNEY.



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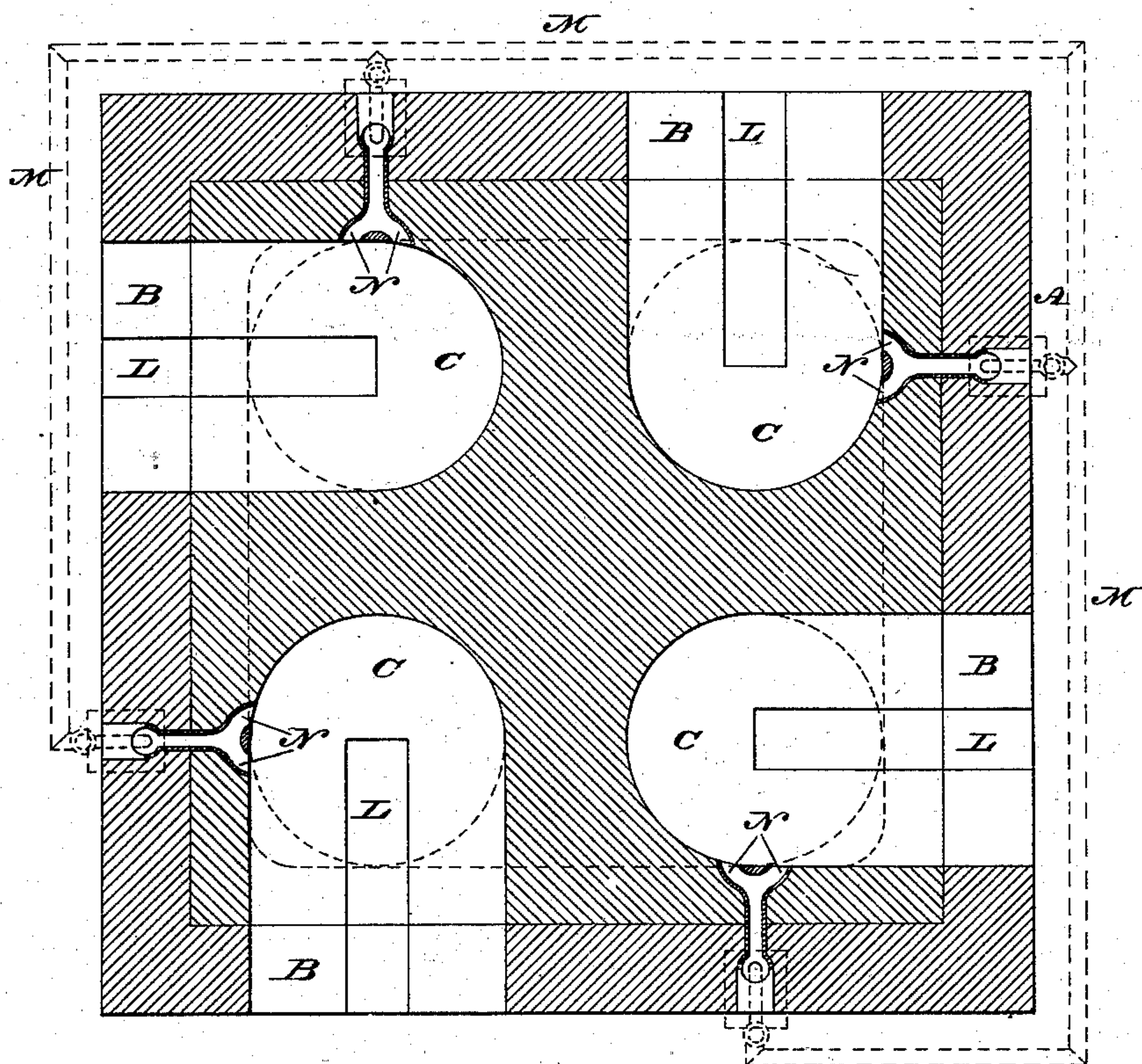
2 Sheets—Sheet 2.

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Fig. 3.



WITNESSES:

*L. Douville*  
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INVENTOR:

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# UNITED STATES PATENT OFFICE.

AUGUST STEIN, OF PHILADELPHIA, PENNSYLVANIA.

## GAS-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 283,297, dated August 14, 1883.

Application filed April 10, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST STEIN, a subject of Germany, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Gas-Generators, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a plan or top view of the generator embodying my invention. Fig. 2 is a vertical section thereof. Fig. 3 is a horizontal section in line *xx*, Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of certain improvements in gas-generators whereby they are made compact, simple, and effective. Provision is made for charging the generators while in operation, stoking of the stock, observing the process of distillation, removing the refuse and residuum, and the admission of warm air to the gas. Provision is furthermore made for cutting off portions of the generator, for repairing or cleansing the same, without disturbing the remaining portions of the generator.

Referring to the drawings, A represents the walls of the generator, which is properly lined and formed with horizontal openings B, which lead to the chambers C, of which, in the present case, four are shown, separated one from the other and open at top, so as to communicate with the main chamber C'. The top C' of the chamber C' is arched and perforated vertically for the passage of gas from said chamber, the space of the generator above said top having communicating with it a pipe, D, which is connected to the wall A and directs the gas to the place of service.

E represents a chute or pipe, which enters the generator at top and leads into the chamber C', and has a closing-valve, F, and a weighted charging-valve, G. In the top of the generator are also capped openings or pipes H, which extend vertically and permit access to the openings in the top C' of the chamber C', whereby the coal in the latter may be conveniently stoked and said openings cleared and cleaned.

In the side walls, A, are horizontal openings J, through which the process of distillation or

combustion may be observed, and horizontal throats K, which are adapted to receive flat and broad plates and cover the tops of the chambers C, when required, as will be hereinafter stated.

At the base of the chambers C are channels L, which lead outwardly through the walls of the generator for passing off the residuum without disturbing the operation of the generator.

In order to direct air or other gas to the chambers C, I employ pipes M, to which the tuyeres N are connected, said tuyeres passing through the walls of the generator and leading to the chambers, and having forked ends, whereby the currents of air or gas are directed around the chambers instead of to the center, thus causing the air or gas to be uniformly diffused in the chambers.

The operation is as follows: The openings B are uncovered and the chambers C filled with fuel and gas, coal, or material from which gas may be made. The openings B are then closed and the fuel in the chambers is ignited, and the process of making the gas then proceeded with. When the chambers require charging, the valve F is opened and a proper quantity of material placed on the valve G. The valve F is then closed and the charge dumped from the valve G, which operations may be repeated until the chambers are suitably charged, the material admitted being evenly distributed throughout the generator.

If, during the operation of the generator, it is found that any one of the chambers is choked or requires cleaning, the tile and packings of the openings B are removed and a metal plate is inserted in one of the throats K, so as to close the top of the respective chambers C, thus entirely cutting off said retort from the other retorts without disturbing the latter or impeding the operation of generating gas therein. The chamber, which is covered by the metal plate, may then be cleared and cleaned, repaired, &c., after which it may be recharged and fired and the plate removed, the chamber then joining the other chambers in the production of gas.

In order to obtain warm air, which may be united with the gas as produced for various purposes, I employ a pipe, P, which is passed around the walls A, so as to be heated there-



by, and connected with the discharge-pipe D a proper distance from the generator, the gas and air uniting and so passing to the place of service.

5 The perforated top C' of chamber C' shields from injury the mouths of the pipes and flues, which open into the space above it, but allows gas to pass up through it to reach the outlet-flue. The object of mixing the gas with heated  
10 air is to facilitate combustion.

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

1. The furnace or generator having a perfo-

rated arch, C'', in combination with the wall 15 above the arch, provided with the vertical stoking pipes or passages H, which communicate with the space between the arch and top wall, substantially as set forth.

2. The pipes M and tuyeres N, in combina- 20 tion with the chambers C, open on top, with which they communicate, and the main chamber C', arranged vertically above said chambers C, substantially as set forth.

AUGUST STEIN.

Witnesses:

JOHN A. WIEDERSHEIM,  
W. F. KIRCHER.