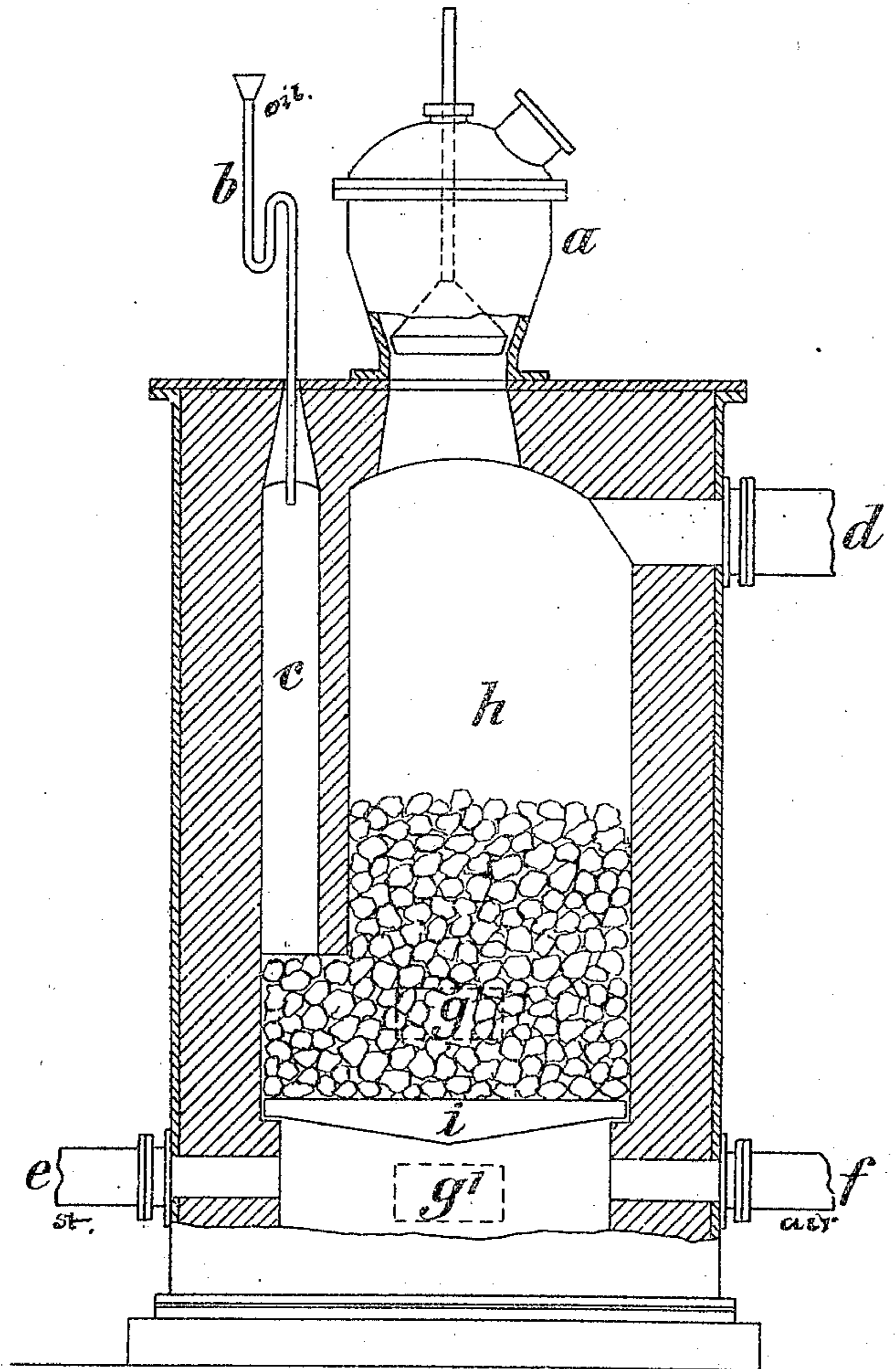


No. 821,928.

PATENTED MAY 29, 1906.

F. DANNERT.  
PROCESS OF MAKING GAS.  
APPLICATION FILED OCT. 23, 1905.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## PROCESS OF MAKING GAS.

No. 821,928.

Specification of Letters Patent.

Patented May 29, 1906.

Application filed October 23, 1905. Serial No. 283,876.

*To all whom it may concern:*

Be it known that I, FRITZ DANNERT, a citizen of the Empire of Germany, residing at Berlin, in the Empire of Germany, have invented a new and useful Improvement in Processes of Making Gas, of which the following is a specification.

In the production of non-condensable carbureted generator-gas or water-gas heretofore the two following methods were in use. The one method consisted in separately vaporizing the hydrocarbon, mixing the vapors with the generator-gas or water-gas either after the gas has left the glowing fuel in the generator or in the uppermost layer of the glowing fuel and in converting the mixture into a fixed gas by conducting it through a special chamber filled with glowing bodies or through highly-heated tubes. The second method consisted in introducing the hydrocarbon into the zone of combustion in the furnace or generator, where it mostly burned and did not carburet the heating-gas or enrich the same with carbon, but increased merely the percentage of carbon oxid and hydrogen.

My invention relates to an improved process of producing non-condensable carbureted generator or water gas, whereby a great saving in hydrocarbon is made and the process of carbureting considerably simplified.

According to my improved process the hydrocarbon is introduced from above into the glowing fuel and the zone of reduction. The burning of the carbureted hydrogen is thereby avoided, while it is at the same time heated to a sufficiently high temperature in order to be converted into a fixed gas. This conversion is probably assisted by the liberated hydrogen in the zone of reduction acting in its nascent state on the heavy hydrocarbons, forming thereby lighter hydrocarbons without separation of carbon.

In the accompanying drawing is shown a vertical section of a gas-generator for carrying out my improved process, although I do not limit myself to the construction shown. This gas-generator comprises a furnace *h*, with the grate *i*, an air-tight fuel-charging device *a* of any known construction, a door *g* for removing the slag, an ash-pit door *g'*, a blast-pipe *f*, a steam-pipe *e* at the lower part, and a discharge-pipe *d* at the upper part of the generator. Within the furnace *h* is ar-

anged a small shaft *c*, which is open at its lower end and which extends downwardly through the zone of oxidation into the zone of reduction of the fuel. *b* denotes a siphon-tube for the introduction of the liquid hydrocarbon.

The improved generator is operated as follows: After kindling the fire in the usual manner the blast-air, either cold or warm, is admitted through the pipe *f* into the space beneath the grate *i*. When the combustion has proceeded so far that the fuel glows, the admission of the blast-air is stopped and the hydrocarbon liquid introduced through the siphon *b* into the shaft *c*. The liquid is vaporized by the great heat prevailing in the furnace *h* and the vapors raised to the temperature of the zone of reduction in the combustion-chamber. The hydrocarbon may even be superheated. Steam is admitted from any source through the pipe *e* to the space beneath the grate *i*. The hydrocarbon passes from the shaft *c* to the zone of reduction of the glowing fuel, while the steam is acted upon by the latter in the well-known manner. The carbureted water-gas thus formed is then collected and conducted from the furnace *h* through the discharge-pipe *d* to a storage vessel or to the point of use, as the case may be. From time to time it will be necessary to interrupt the supply of steam and hydrocarbon and to admit the blast-air in order to fire the fuel, which is supplemented by supplying additional quantities of fuel through the charging device *a* in the usual manner. When the fuel again attains the proper heat, the supply of blast-air is stopped and the steam is again turned on and hydrocarbon vapors supplied by the introduction of hydrocarbon into the shaft *c*, said vapors being conducted from the latter into the zone of reduction. The length of the interruptions must be left to the judgment and experience of the operator.

From the drawing it is evident that the construction of the generator is considerably simplified. The process presents the important advantage that the quantity of hydrocarbon required is far less than that which is necessary with other known methods for the following reasons: First, the hydrocarbon undergoes but one single heating and is not permitted to be burned, and, second, the fixed carbureted gas thus obtained is superior

to that obtained by other methods, since the hydrocarbon is enabled to act at the proper temperature in the zone of reduction upon the hydrogen in its nascent state.

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

1. The process herein described of making gas, which consists in vaporizing a liquid hydrocarbon by the heat of the combustion-chamber, and then conducting the vapors thus generated into the zone of reduction of the glowing fuel at the temperature of such zone.

15 2. The process herein described of making

gas, which consists in vaporizing the liquid hydrocarbon by the heat of the combustion-chamber, then conducting the vapors thus generated into the zone of reduction at the temperature of such zone, and supplying the steam to the glowing fuel, and conducting off the resulting carbureted water-gas.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

FRITZ DANNERT.

Witnesses:

WOLDEMAR HAUPT,  
HENRY HASPER.