

No. 766,058.

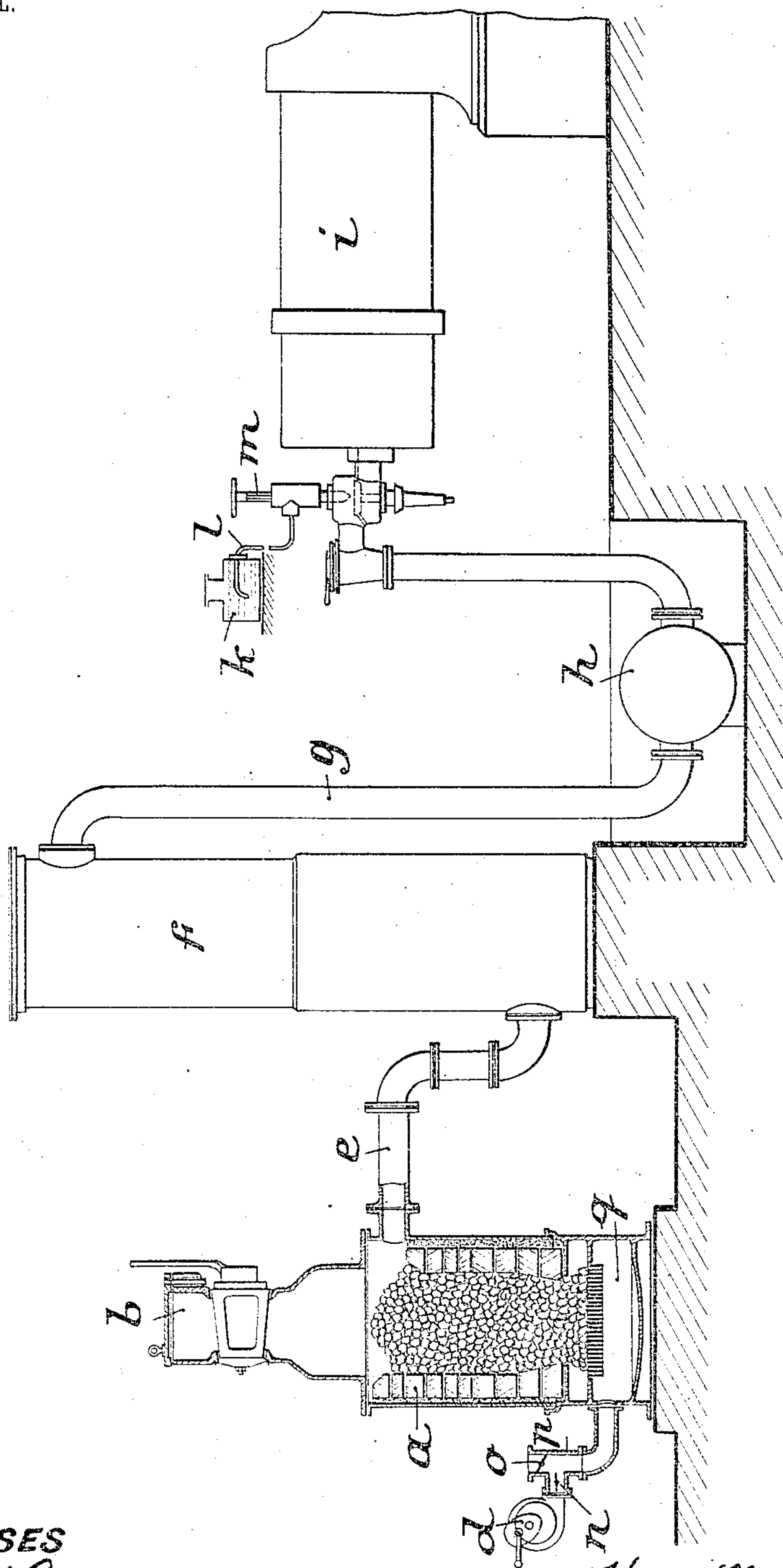
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H. NEUMANN.

METHOD OF PUTTING INTO OPERATION GAS PRODUCERS WORKING  
INTERNAL COMBUSTION MOTORS.

APPLICATION FILED OCT. 12, 1903.

NO MODEL.



**WITNESSES**

E. O. Kildebrand  
Jessamine L. Palmer

***INVENTOR***

8  
by Hans Nuemann  
Georgii Masse  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

HANS NEUMANN, OF COLOGNE, GERMANY.

METHOD OF PUTTING INTO OPERATION GAS-PRODUCERS WORKING INTERNAL-COMBUSTION MOTORS.

SPECIFICATION forming part of Letters Patent No. 766,058, dated July 26, 1904.

Application filed October 12, 1903. Serial No. 176,779. (No model.)

*To all whom it may concern:*

Be it known that I, HANS NEUMANN, engineer, a subject of the German Emperor, residing at 31 Neuhöferstrasse, Cologne, Germany, have invented certain new and useful Improvements in Methods of Putting into Operation Installations of Gas-Producing Internal-Combustion Motors; and I do hereby 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.

The putting into operation of installations of gas-producers working internal-combustion motors has heretofore been effected by blowing air into the still weakly-glowing charge of fuel of a gas-producer that has cooled down to a certain extent during a period of non-working, such blast being continued until the incandescent charge has attained a sufficiently high temperature at which the chemical processes necessary for the production of producer-gas can be carried out. Only after the producer has been brought to this condition can a motor-engine that is supplied with the producer-gas be set to work. With this method of starting the producer the incombustible gases produced during the preliminary blowing are discharged into the atmosphere, and in particular when fuel containing a considerable amount of tar is employed very objectionable odors are produced.

The present invention relates to a method of operation for starting the gas-producers for working internal-combustion motors whereby the above-mentioned disadvantage is obviated.

The method consists in causing the gas-motor itself to draw off the incombustible gases first produced from the producer, the said gases being at the same time rendered combustible by mixing therewith liquid or gaseous combustible matter, such as by causing the gas to pass through a carbureter connected to the gas-conduit. The motor is then worked by means of this carbureted gas, and by this means the objectionable constituents of the said gases first given off from the producer are converted by the combustion in the motor into water and carbon dioxide, and

thus the objectionable odor is done away with. The carbureting of the incombustible gases can also be effected in the motor itself by introducing into the same both the gases from the producer and a suitable combustible. As in consequence of the drawing off of the gases from the producer fresh air is drawn into the same, it will be gradually heated up until the requisite working temperature is attained, when it will be able to supply the motor without requiring carbureting. The carbureter is then cut off and the normal working commences. The sucking action of the motor may, if necessary, be assisted by providing either a suction-fan between the producer and the motor or a blowing-fan in front of the producer.

In illustration of my invention a gas-generator plant is represented in the accompanying drawing in which the necessary steam-air mixture is fed to the generator by the suction effect of the motor and in which a pressure air-pump arranged in front of the generator is used for creating draft.

In the drawing, *a* represents the generator, and *b* a hopper through which the fuel is introduced. The gases from the generator pass through the pipe *c* to the scrubber *f* and thence through the pipe *g* and the gas-chamber *h* to the motor *i*. The carbureting device is arranged between *h* and *i* and consists of a vessel *k*, containing the carbureting liquid, the tube *l*, and the needle-valve *m*, by which the feed of the carbureting liquid may be regulated or cut off. In front of the generator is arranged the rotary pump *d*, which is connected with the same by pipe *p*. With the aid of this pipe *p* the ash-box *q* may be put in communication with the pump or the atmosphere.

In starting, the damper *o* is first closed and the damper *n* opened, and then the fan-blower is started. The incombustible gases thus formed pass through the path above indicated, come into contact with the carbureting liquid at the open valves *m*, and form with the same a combustible mixture which may serve for supplying the motor. As soon as the nature of the gas from the generator becomes such that no further carbureting is necessary the



damper *o* is opened and the valve *m* and the damper *n* are closed and the fan-blower is stopped.

5 Having thus particularly described and ascertained the nature of my said invention and the best means I know of carrying the same into practical effect, I claim—

1. The herein-described method of starting gas-producers working internal-combustion  
10 engines, which consists in causing a draft of air upon the partially-cooled contents of the producer, carbureting the resultant incombustible gases, and utilizing such carbureted gases to drive the engine until the normal  
15 working of the producer is set up.

2. The herein-described method for putting in operation gas-producers working internal-combustion motors which consists in causing the incombustible gases first produced by  
20 blowing air into the producer to be led into the motor while at the same time combustible material is mixed with said gases so as to work the motor by their combustion, this being continued until the normal working of the pro-  
25 ducer is set up.

3. The herein-described method of starting gas-producers working internal-combustion engines which consists in carbureting the gases first produced by blowing air into the producer, and causing such carbureted gases to  
30 be sucked into the motor and utilized to work the same by their combustion, until the normal working of the producer is set up.

4. The herein-described method of starting gas-producers working internal-combustion  
35 engines which consists in carbureting the incombustible gases first produced by blowing air into the producer and causing them to be drawn into the motor worked by their combustion the suction of the motor being aided  
40 by a fan, until the normal working of the producer is set up.

In testimony whereof I have affixed my signature to this specification in the presence of two witnesses.

HANS NEUMANN.

Witnesses:

WILHELM RÜPPERS,  
GUSTAV ELSNER.