No. 795,907. PATENTED AUG. 1, 1905.

H. GERDES.

GAS PRODUCER.

APPLICATION FILED FEB. 23, 1904.

2 SHEETS—SHEET 1.

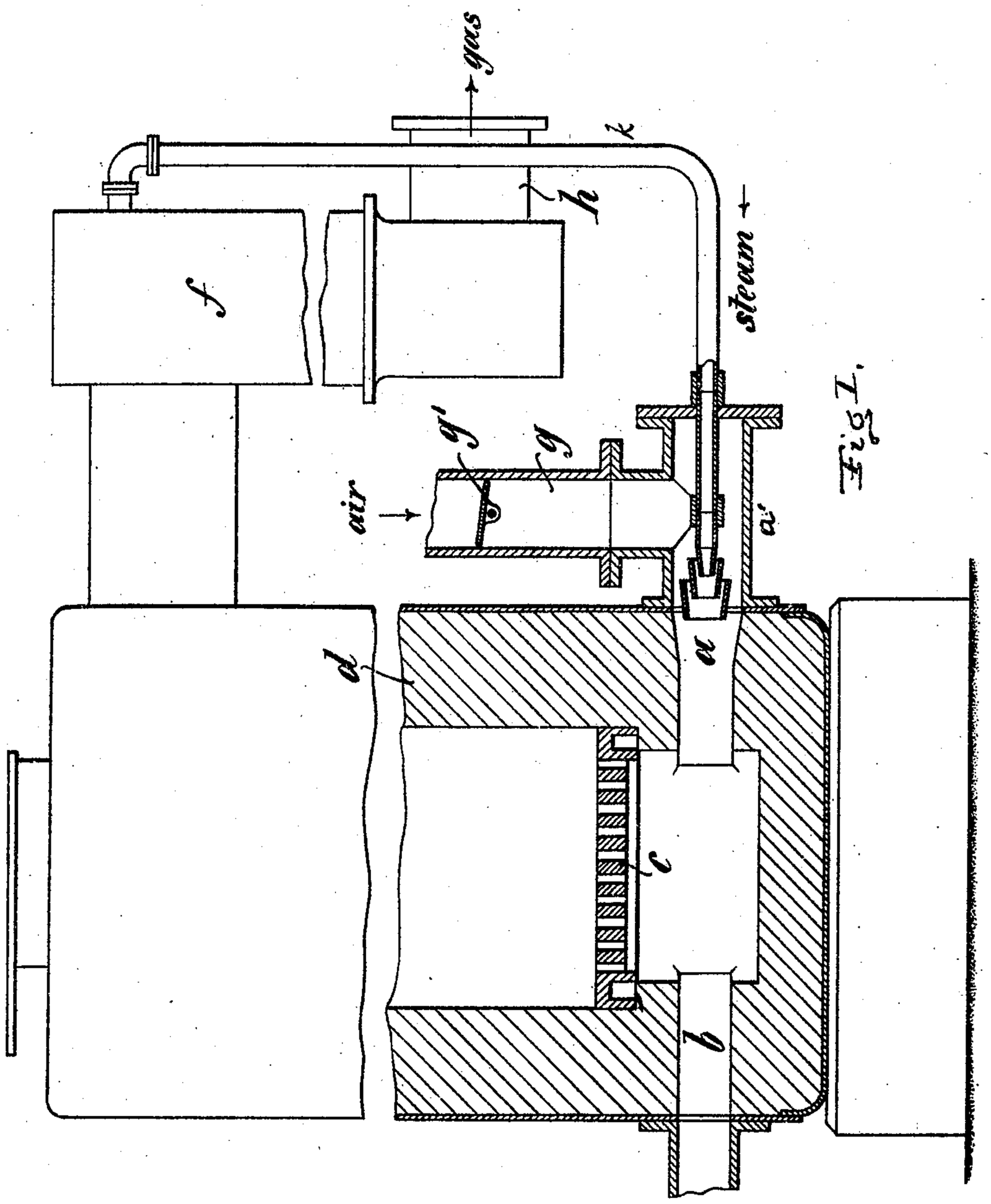

Fig. 1.

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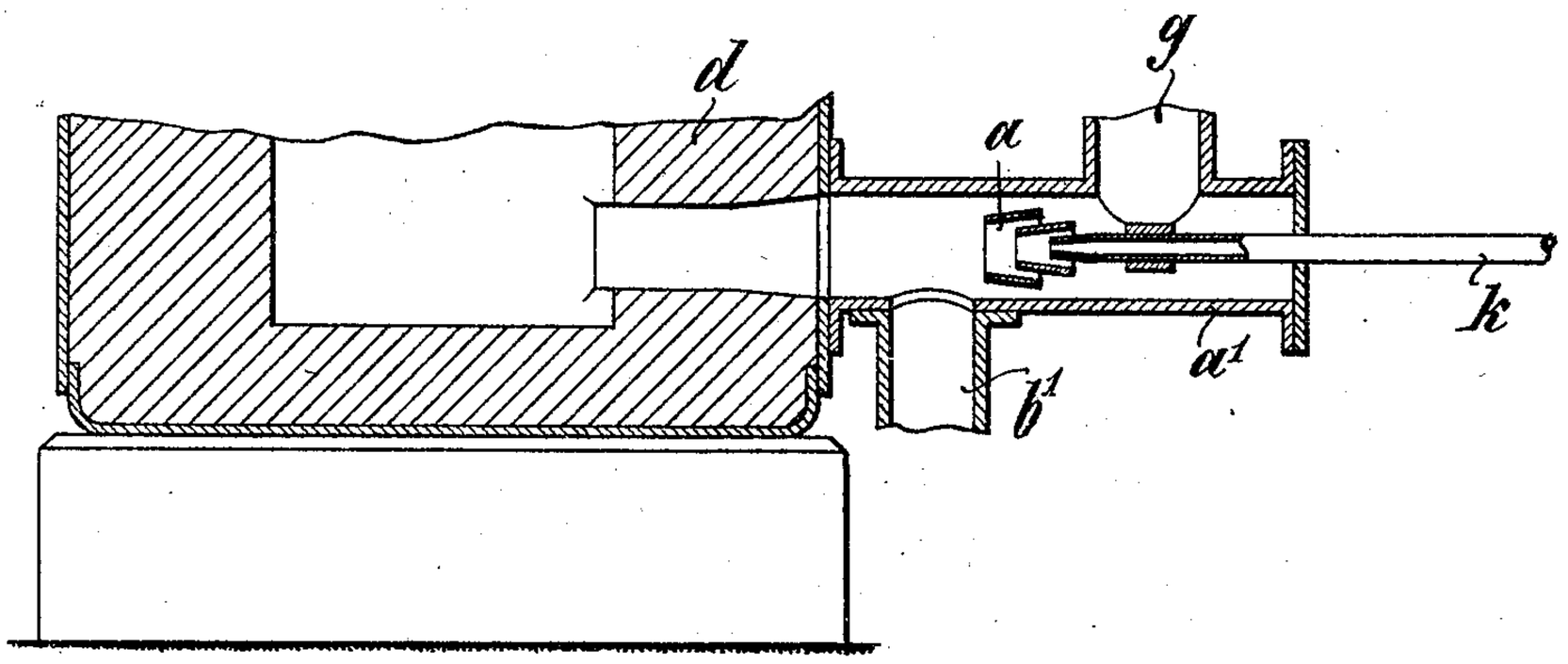
2 SHEETS—SHEET 2.

Fig. 2



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UNITED STATES PATENT OFFICE.

HEINRICH GERDES, OF BERLIN, GERMANY, ASSIGNOR TO AMERICAN SUCTION GAS PRODUCER CO., OF LANSING, MICHIGAN.

GAS-PRODUCER.

No. 795,907. Specification of Letters Patent. Patented Aug. 1, 1905.

Application filed February 23, 1904. Serial No. 194,782.

To all whom it may concern:

Be it known that I, HEINRICH GERDES, a subject of the German Emperor, and a resident of Berlin, German Empire, have invented a certain new and useful Improvement in Gas-Producers, of which the following is a full, clear, and exact description.

The present invention relates to gas-producers, and more particularly to that class of gas-producers for making generator-gas in which the furnace is kept working in that the gas produced is drawn off by suction from the same. In this class of producer the suction is generally produced by the motor, which is driven by the gas produced, and in utilizing or consuming this gas causes periodical suction in the generator, whereby the necessary quantity of steam and air is drawn into the generator. In connection with this class of producer the steam requisite for forming the gas is produced in a cooling apparatus for the gas developed in that the hot gases passing through the said cooling apparatus give off sufficient heat to develop the necessary quantity of steam for the producer.

In connection with apparatus of the class mentioned it has been found advantageous in practice to allow the steam-and-air mixture to enter the producer at a slightly higher pressure than that generally present in the producer. This practice, although advantageous in the production of gas, has the drawback that a certain amount of danger is involved in case the motor does not draw off the gas evenly. Thus, for instance, if the amount of work to be performed by the motor is suddenly reduced, the suction periods will become less and irregular in that the motor does not require so much gas and the steam-and-air mixture continuing to enter the producer might develop pressure therein.

The object of the present invention is to avoid this danger and to provide means for preventing the accumulation of pressure in the producer even when the motor has been stopped. In order to attain this object, a suitable opening or outlet is provided in the producer below the grate, so that in the event of the suction periods becoming irregular or if the suction ceases altogether the superfluous steam-and-air mixture will flow off below the grate into the open air. Any gas-pressure which may be generated in the producer will also pass down through the grate and mixing with the steam and air will ignite there and pass out at the opening or orifice provided without causing explosions or in any way endangering the apparatus.

In order to render the present specification easily intelligible, reference is had to the accompanying drawings, which show a part of the producer with the invention applied thereto.

Figure 1 is a part vertical section of one form of producer embodying the invention; and Fig. 2 is a vertical section through the lower part of the furnace, showing a modified form of the invention.

Only so much of the apparatus is shown as is necessary for the proper explanation of the invention.

The gas-producer *d* may be of the ordinary type, from which the gas passes out at the top to the cooling apparatus *f* and thence through the pipe *h* to the motor or other point of combustion or consumption. In the cooling apparatus *f* for the gas the steam for its production is produced in the well-known manner and conducted, by means of the pipe *k*, to the injector *a*, arranged within the pipe *a'*. The pipe *a'* is in communication with the air-feed pipe *g*, through which the air is conducted to the injector. The amount of air fed may be regulated by means of a valve *g'*. Beneath the grate *c* an outlet-opening *b* is provided, and through this opening the superfluous steam-and-air mixture coming from the injector *a* can escape. If any superfluous pressure accumulates in the producer *d*, the gas will be forced down through the grate *c* and combining with the steam-and-air mixture there will be combusted and escapes at *b* with the steam and air, as will be readily understood.

The outlet *b* need not necessarily be in the exact position shown in the drawings. The pipe *a'* might be prolonged and an outlet inserted in it between the grate and the injector, as shown at *b'* in Fig. 2. It is essential that the outlet be between the under side of the grate and the injector.

I claim as my invention—

1. In a gas-producer, which is worked by the suction of the motor connected up thereto, and in which the steam and air are fed beneath the grate by means of an injector the combination of an outlet for superfluous steam, air and gas, located beneath the grate and in

open communication with the grate and injector.

2. In a gas-producer which is worked by the suction of the motor connected up thereto and in which the steam and air are fed beneath the grate by means of an injector the combination of an outlet for superfluous steam, air and gas, located in the wall of the producer beneath the grate substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HEINRICH GERDES.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.