

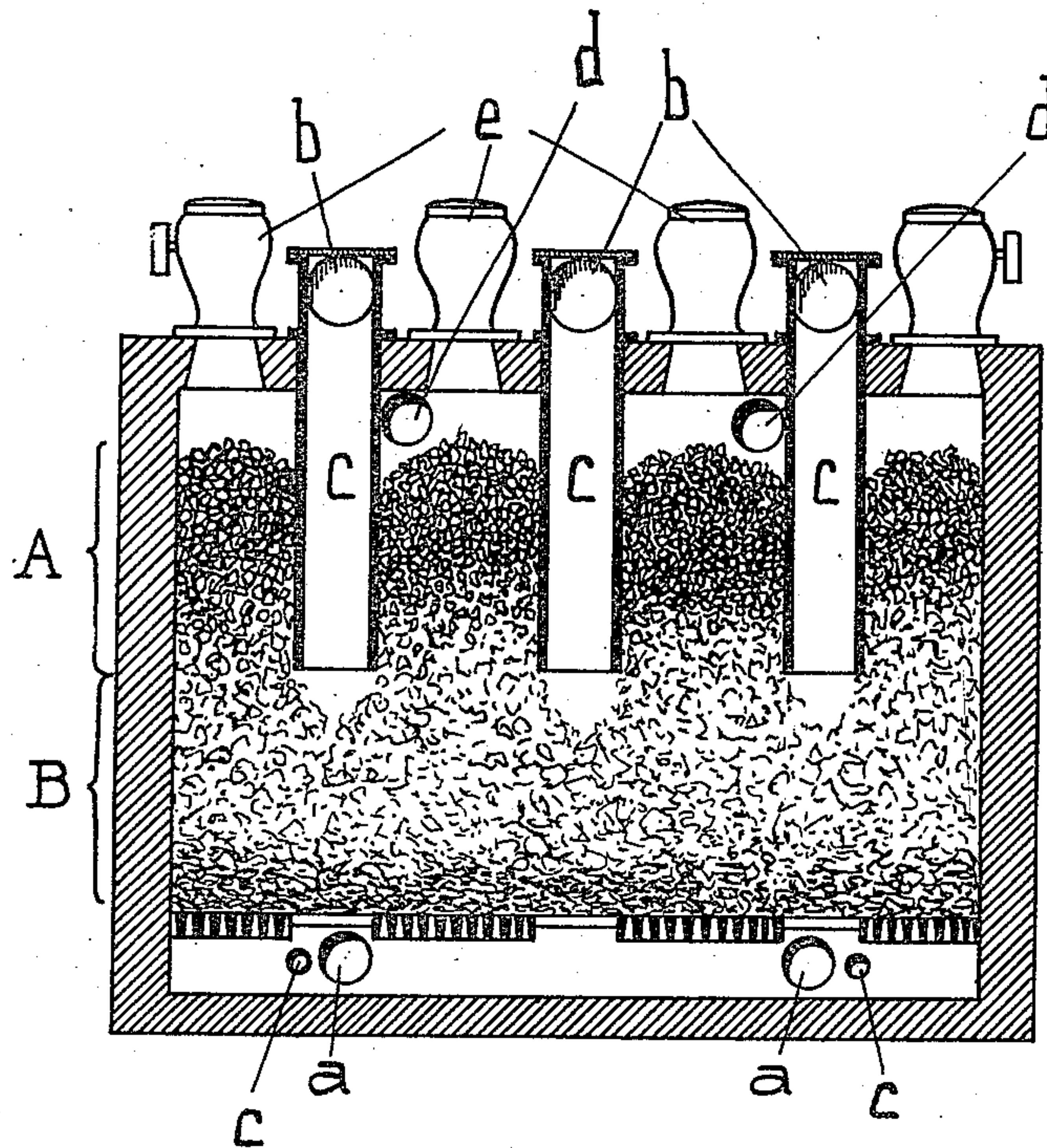
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1,459,058

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APPARATUS FOR REMOVING BLAST GASES FROM WATER GAS GENERATORS

Filed Oct. 11, 1921



Inventor,
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR REMOVING BLAST GASES FROM WATER-GAS GENERATORS.

Application filed October 11, 1921. Serial No. 507,034.

To all whom it may concern:

Be it known that I, HEINRICH KNÖFEL, a citizen of the German Republic, residing at Frankfort-on-the-Main, Germany, have
5 invented certain new and useful Improvements in Apparatus for Removing Blast Gases from Water-Gas Generators, of which the following is a specification.

In the production of non-luminous water
10 gas or luminous so-called carburetted water gas, in which the gas is mixed with oil or other distillation products having a high carbon content to impart the desired luminous properties to the gas, it is a common
15 practice in the art to carry on the distillation of the fuel in a generator in the upper part of which the fuel is distilled and the gasification is carried on in the lower part to produce the water gas. In order to ob-
20 tain the high temperature required for the decomposition of the steam and the production of the water gas the column of fuel in the generator is first raised to incandescence by forcing a blast through the fuel for sev-
25 eral minutes after which steam is introduced.

In the practical operation of carrying out the process for producing water gas a serious defect is encountered which consists in
30 the formation in the center of the generator of a large core of incompletely distilled fuel which not only interferes with the proper circulation and production of the gases but also decreases the output of tar and other
35 non-volatile hydrocarbons.

The principal object of this invention therefore, is to provide a means for preventing the formation of the aforementioned core and thereby overcoming the defects
40 heretofore noted. This means consists in inserting into the top of the generator an element for carrying off the blowing gases, and in extending this element to the zone which separates the upper distilling por-
45 tion or shaft of the generator from the lower combustion portion or shaft, these elements being inserted into that part of the generator where the unburned fuel core was formerly formed. By this expedient
50 the novel effect is obtained that the formation of the core of undistilled fuel is prevented, the carrying off of the blowing gases is not only facilitated but is effected in such a manner that the blast gases are prevented
55 from driving up into the upper distillation

layer so that the rich gas which is formed in this layer is substantially undiluted.

My invention is not only applicable to that type of generators or producers in which the fuel is charged in a single column
60 or mass but also to those apparatuses which are subdivided into compartments.

For the accomplishment of these and such further objects as will hereinafter be ap-
65 parent to those skilled in the art to which this appertains, the invention consists in the construction, combination and arrangement of parts herein specifically described and illustrated in the accompanying draw-
70 ings, wherein is shown a preferred embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the claims hereunto appended.

The figure of the drawing represents a
75 vertical section through a generator or producer embodying my invention.

The fuel is charged through the charging devices *e*, into the generator, the upper por-
80 tion of which as indicated by the letter A comprises the upper distillation layer while the lower portion indicated by the reference letter B comprises the gas and combustion
85 producing layer in which the steam is decomposed and combines with the carbon of the fuel to form the water gas in accordance with the well known process and reac-

tions.
In accordance with my invention, and as shown in the drawings, a number of tubes
90 C are inserted through the top of the generator and extend downwardly therein to the zone which separates the upper layer A from the lower layer B. During the blow-
95 ing step of the process the blast of air or other gas which is introduced in the generator through the openings *a* is carried off directly by the tubes C, and escapes through the registers *b*. During the introduction of
100 the steam or the gas producing period, the steam which enters through the steam con-
duit *c* traverses the whole fuel column and flows out through the gas outlets *d*, which
105 is caused by closing the registers *b*, these being provided with valves or dampers ac-
cording to the usual and common practice in this art.

During the blasting period the zone B is a combustion zone through which the air
blast passes from the openings *a* to the
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tubes *c*, while during the steam or gas making period the zone B becomes a generating zone.

It will be understood that the tubes C may be of any desirable shape, size, or number and that in a small producer a single tube may be used which forms in effect an extension of the chimney.

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

The combination with a water-gas generator of the type operating with alternate gas-making and air-blasting periods and having an upper distilling zone and a lower combustion zone during the blasting period,

of means extending downwardly from the top of the generator through the distilling zone and terminating at the zone of separation between said distilling and combustion zones to provide a conduit through which the blast gases formed in the said combustion zone during the blasting period are carried directly out of the generator without passing through the upper distilling zone.

In testimony whereof I affix my signature in presence of two witnesses.

HEINRICH KNÖFEL.

Witnesses:

FRIEDRICH CARL WENTZEL,
CARL FRIEDRICH LEIBFRIED.