

N. LATTA,
GAS PRODUCER.
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1,008,480.

Patented Nov. 14, 1911.

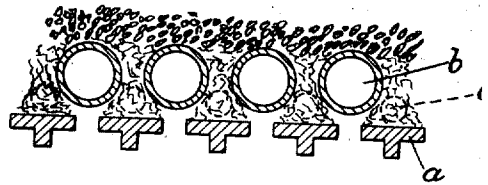


Fig. 2.

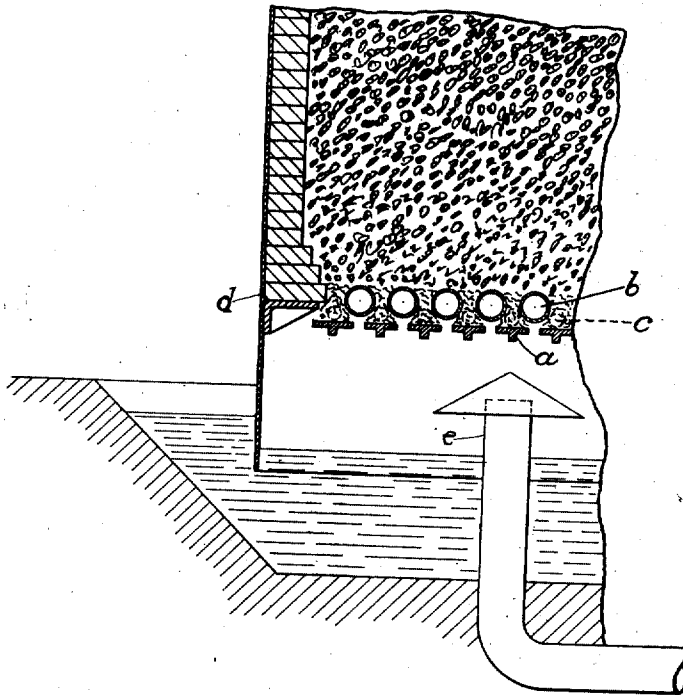


Fig. 1.

WITNESSES:

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NISBET LATTA, OF CORLISS, WISCONSIN.

GAS-PRODUCER.

1,008,480.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NISBET LATTA, a citizen of the United States, and a resident of Corliss, State of Wisconsin, have invented certain new and useful Improvements in Gas-Producers, of which the following is a full, clear, and exact description.

My invention relates to an improvement in the grate structure of gas producers.

Gas producer grates are required to carry a fuel bed of comparatively great depth—far deeper than that ever carried by the grates of heating furnaces—for which reason they present peculiar and serious difficulties.

An extremely serviceable form of grate for gas producer purposes has been practiced, consisting of two horizontally disposed tiers of grate bars, the members of which are staggered between each other and so constructed and disposed that the lower tier maintains the ash at the angle of repose, while the upper tier has flat sloping sides, between which the ash falls upon the lower tier. This grate has one serious disadvantage, to wit: The flat sloping sides of the upper bar are opposed to each other at an angle, and the bases of the ash-arch between any two of the bars are planted more or less squarely against the flat sides. The thrust of the arch is thus fairly encountered and the arch preserved. This arch eventually becomes quite compact and prevents the flow of the ash, thereby disturbing the effective operation of the grate.

The object of my invention is to overcome this disadvantage, and I effect this by so forming the members of the upper tier of bars that the bases of the ash-arch are caused to bear on surfaces oblique to the thrust of the arch, so that the tendency is for the bases of the arch to slip or slide readily by and off these bars and, therefore, the arch is caused to crumble in its inception. This insures the steady flow of ash to the members of the lower tier, and places the discharge of the ash completely under the control of the operator, who has then only to disturb the angle of repose on the lower tier to cause the ash to flow from the grate to any extent desired. Preferably the upper bars are formed with curved or rounding sides, though modifications of this may be resorted to so long as the essential principle herein expressed is retained.

The accompanying drawings represent, as an example, the preferred embodiment of the invention.

In this drawing—Figure 1 is a fragmentary section of a gas producer equipped with my invention, and Fig. 2 is an enlarged or detailed fragmentary section of the grate. 60

The gas producer may be of any of the standard types, either updraft or downdraft.

In the drawings *d* indicates the shell of the producer and *e* may represent either the draft current inlet pipe or the gas outlet, according as the producer is of the up or down draft type. 65

a indicates the members of the lower tier of grate bars which are disposed in a horizontal plane and spaced from each other. The upper surfaces of these bars *a* are formed flat, or are otherwise so shaped or constructed that they will retain the ash in piles on the angle of repose. 70 75

b indicates the members of the upper tier of bars, which are here shown as round pipes. If they are hollow, as illustrated, advantage may be taken of this to water-cool them. The bars *b* are staggered above the bars *a* over the spaces between the lower bars, and the bars of both tiers are so proportioned and distanced from each other that the ash will flow easily between the upper bars and will fall from the same along the angle of repose, to which angle the edges of the bars *a* are coincident, retaining the ash in the manner illustrated in the drawings. 80 85 90

It will, therefore, be seen that I have arranged the upper bars so that their surfaces are presented obliquely to the thrust of the ash-arch between the bars, and, therefore, the bases of the arch are deprived of stability and the arch must fall. When ash is removed from the lower bars, the ash is deprived of its support and drifts readily down, forming a new pile on the lower bars, again at the angle of repose. According to this, for cleaning the grate and discharging the ash, it is only necessary to provide openings in the shell *d*, which openings are indicated by the broken lines *c*, so that poke bars may be inserted just above the plane of the lower tier of bars *a*, through the medium of which poke bars the ash resting on the lower tier of grate bars may be thrown off, thus breaking the angle of repose and allowing the ash to fall from above. 95 100 105 110

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

- 5 1. A gas producer having a grate composed of two tiers of bars horizontally arranged one above the other, the bars of each of said tiers being spaced from each other and the bars of the lower tier arranged opposite the spaces between the bars of the
10 upper tier and provided with surfaces capable of carrying the ash in piles on the angle of repose and the bars of the upper tier having curved cross sectional contour at all points exposed to the weight of the producer
15 contents, whereby the bases of the ash-arch between any two of the bars of the upper tier bear on surfaces disposed obliquely to the thrust of the arch, and the arch is thus deprived of stability and caused to fall.
- 20 2. A gas producer having a grate composed of two tiers of bars horizontally arranged one above the other, the bars of each of said tiers being spaced from each other and the bars of the lower tier arranged op-

posite the spaces between the bars of the upper tier and provided with surfaces capable of carrying the ash in piles on the angle of repose and the bars of the upper tier having curved cross sectional contour at all points exposed to the weight of the producer contents, whereby the bases of the ash-arch between any two of the bars of the upper tier bear on surfaces disposed obliquely to the thrust of the arch, and the arch is thus deprived of stability and caused to fall, and the body or shell of the producer provided with means facilitating breaking down the ash piles on the lower tier of bars to allow the flow of ash between the bars of the upper tier.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NISBET LATTA.

Witnesses:

E. T. ADAMS,
W. P. MARR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."