

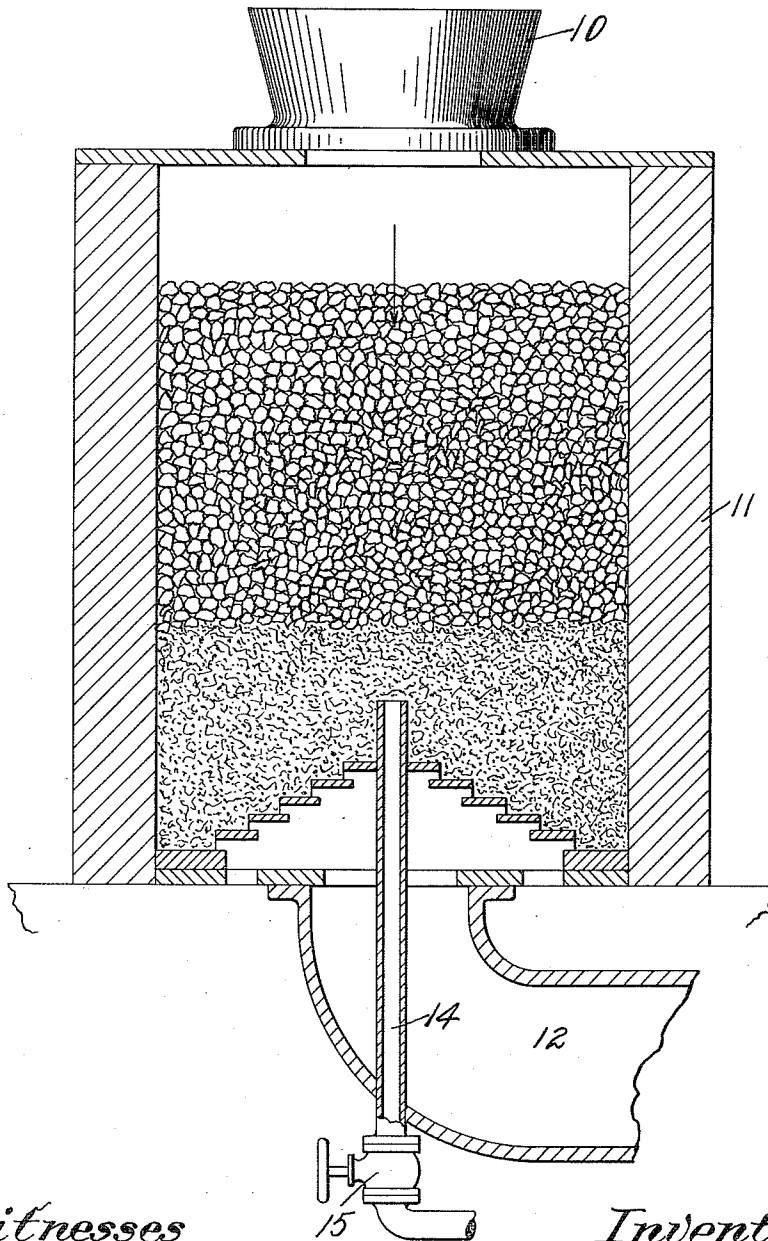
N. LATTA.

PROCESS OF OPERATING GAS PRODUCERS.

APPLICATION FILED SEPT. 29, 1910.

1,018,832.

Patented Feb. 27, 1912.



Witnesses
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UNITED STATES PATENT OFFICE.

NISBET LATTA, OF SAN FRANCISCO, CALIFORNIA.

PROCESS OF OPERATING GAS-PRODUCERS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NISBET LATTA, of the city of San Francisco, county of San Francisco, State of California, have invented certain new and useful Improvements in Processes of Operating Gas-Producers, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the agitation of fuel in gas producers. This is a problem which has given a great deal of difficulty in the development of gas producers and the object has been sought in many ways, including mechanical agitation and blasts of gases through the fuel ash beds by which to lift or loosen the packed mass within the producer. It has been found in practice that these beds of fuel and ash tend to pack tightly, particularly in down-draft producers, where the weight of the producer contents is supplemented by the downward pressure of the draft current, and in order to allow free movement of the draft current and proper progress of the fire, the packed masses must be loosened at intervals.

In accordance with my invention I introduce into the interior of the mass of material within the producer an explosive gaseous mixture and cause the same to ignite, producing an explosion which is followed by an upheaval of the contents of the producer loosening or agitating the same in the desired manner. The explosive mixture may be of various natures; it is manifestly most convenient and economical to return some of the producer gas to the producer mixed with air and form the explosive mixture in this manner. Further, the mixture may be ignited either by the fire within the producer or by an igniting means provided for this purpose. In this respect also it is plainly preferable to bring about the ignition by the fire within the producer, thus avoiding the expense of constructing and maintaining ignition devices.

The accompanying drawing represents more or less diagrammatically the outline of a producer of the down-draft type and illustrates a manner of practicing my invention.

In said diagrammatic drawing 10 represents the body of the producer; 11 indicates a charging and draft current inlet means and 12 the gas outlet at the bottom, the

drawing assuming the producer of the down-draft type, though, of course, my invention is in no sense limited to this type of producer.

14 represents a pipe passing from a suitable source of air and gas in explosive proportions into the interior of the producer. Said pipe is shown as fitted with a control valve 15 and by its means an explosive mixture may be introduced into the producer at any convenient or desired point. The example given in the drawing assumes this mixture to be introduced over the grate and near the dividing line between the ash and fuel strata. Such explosive mixture so introduced instantly upon meeting the fire within the producer will be ignited and explosion will follow which can only act upward on the producer contents loosening the same and effecting the agitation described. My invention is in no sense concerned with the mechanism for carrying it out and therefore I have not illustrated or described the specific details of the devices for introducing the explosive mixture. Means will, of course, be provided to prevent back-flashing through the pipe line and encounter the other conditions incident to the process itself.

Concerning the mixture employed, it is known that there are two mixtures of air and gaseous fuel, namely, combustible mixture and explosive mixture, the former being mixtures rich in fuel which merely burn and the latter being mixtures in which the fuel content is reduced or so proportioned that when ignited the mixture burns with explosive violence or, as is commonly stated, it explodes. This latter mixture is the one which I prefer to employ. Its composition obviously depends upon the character of the gas employed, and the proportions necessarily vary to meet the precise conditions. They are known for every known gas and are readily formed as is instanced by the universal use of the gas or explosive engine which utilizes in its various forms gaseous fuels of almost every known character. The pressure at which the mixture is delivered is also a matter purely dependent upon the special conditions under which the process is practiced; ordinarily the pressure should be merely sufficient to introduce the gas into the bed of the producer. Back-flashing is not necessarily dependent upon the pressures

employed, but may be provided for by any of the known means of preventing back-flashing such, for instance, as the familiar screen of Bunsen burners.

5 It will be observed that the process is especially applicable to the purpose of agitating producers during the operation thereof and without interrupting such operation and in fact its use at this time is facilitated
10 by the presence of the fire in the producer serving as an igniting agent.

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

15 1. The process of agitating the contents of gas producers which consists in introducing a body of explosive mixture of air and gas and igniting the same in such proximity to the contents of the producer
20 as to cause the force of explosion to lift or disturb such contents.

2. The process of agitating the contents of gas producers which consists in introducing into the producer a body of explo-

sive mixture of air and gas and in igniting 25 such mixture by the inherent heat of the contents of the producer and thus exploding the mixture in such proximity to such contents of the producer as to cause the force of the explosion to lift or disturb such con- 30 tents.

3. The process of agitating the contents of gas producers which consists in withdrawing a portion of the gas generated in the producer, mixing such portion of the 35 gas with air in proportions to form an explosive mixture, introducing such mixture into the producer and exploding the same therein in such proximity to the contents of the producer as to cause the force of the 40 explosion to lift or disturb such contents.

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

NISBET LATTA.

Witnesses:

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R. J. CANTRELL.