No. 706,939. Patented Aug. 12, 1902.

J. A. HERRICK.

GAS PRODUCER.

(Application filed Dec. 14, 1901.)

(No Model.)

Fig. 1.

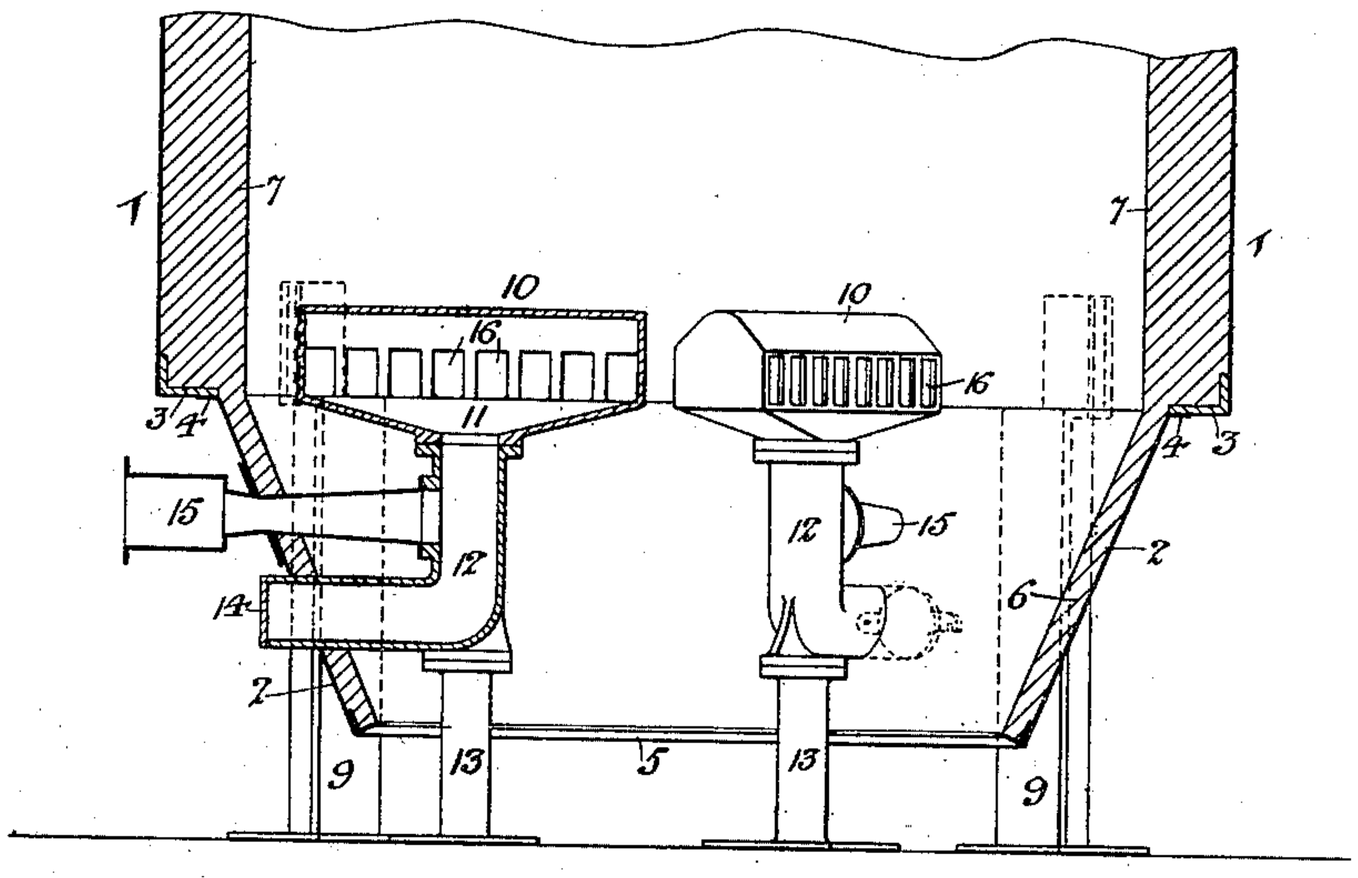
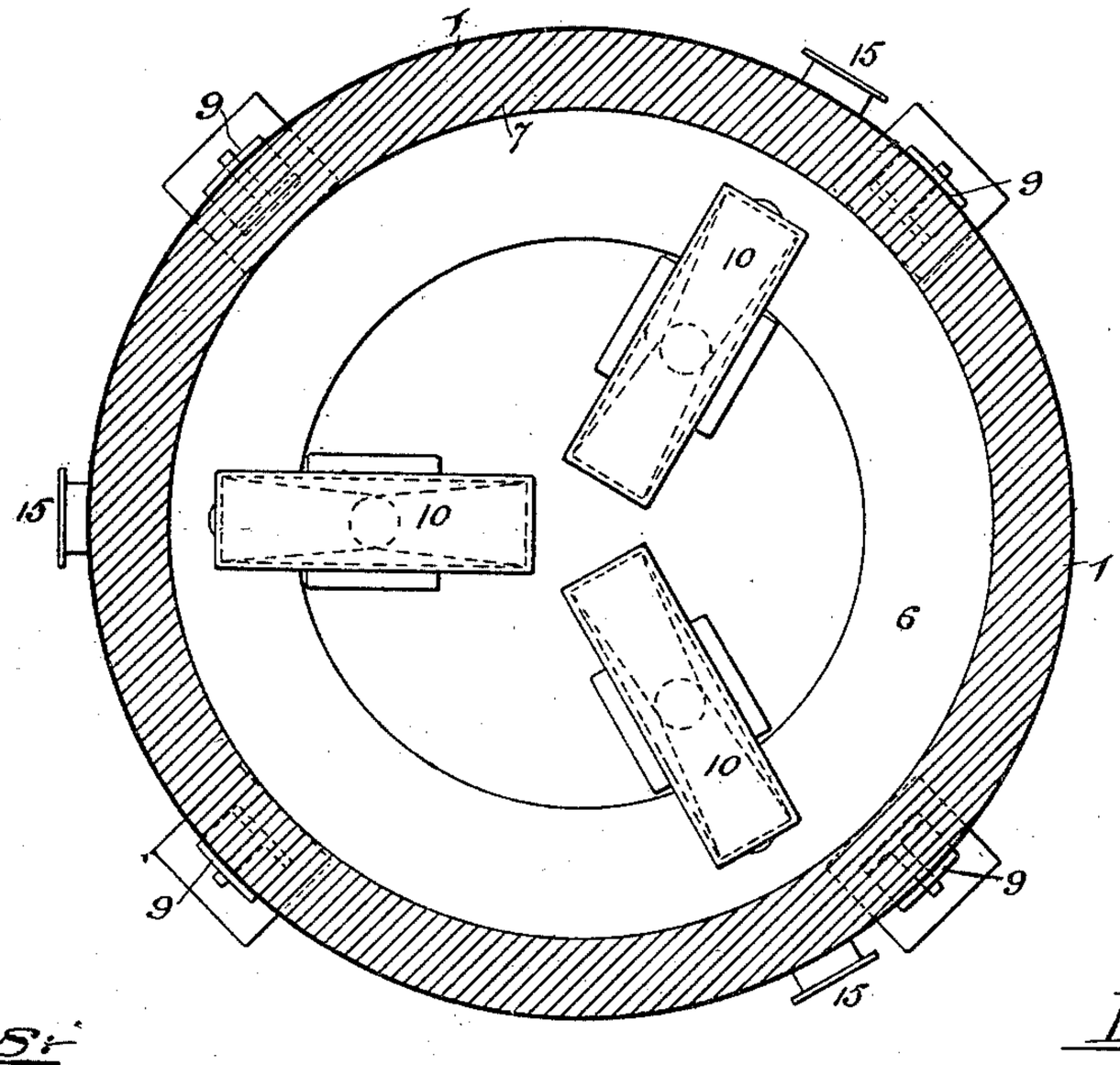


Fig. 2.



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JAMES A. HERRICK, OF PHILADELPHIA, PENNSYLVANIA.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 706,939, dated August 12, 1902.

Application filed December 14, 1901. Serial No. 85,901. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. HERRICK, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Gas-Producers, of which the following is a specification.

The object of my invention is to so construct a gas-producer as to provide for the uniform distribution of air throughout the mass of fuel contained therein and to permit of the free descent of the ashes and clinkers. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of sufficient of a gas-producer to illustrate my invention, and Fig. 2 is a sectional plan view of the same.

1 represents the cylindrical casing of the producer, and 2 the tapering casing of the ash-hopper, an angle-iron base-ring 3 at the bottom of the casing 1 being rigidly bolted or riveted thereto and also to a flange 4 at the upper end of the hopper-casing 2, the latter having at the lower end an angle-iron bar 5, which supports the fire-brick lining 6 of the ash-hopper, said lining forming an unbroken continuation of the fire-brick lining 7 of the cylindrical body of the producer. The angle-iron ring 3 also forms a horizontal shoulder at the bottom of the producer-body, which rests upon the horizontally-offset portions of the supporting legs or columns 9, the upper portions of the latter being carried up for some distance along the casing 1 and being suitably secured thereto, the desired support for the producer being thus provided without carrying said support outside of the circumferential limits of the body of the producer.

So located in the lower portion of the producer as to be wholly embedded in the mass of ashes which accumulates therein are a series of blast-boxes 10—three in the present instance—each of these blast-boxes consisting of an oblong rectangular structure extending radially from a point some distance inward from the fire-brick lining of the producer to a point some distance outward from the axial center of the producer, so that clear spaces are afforded for the descent of the ashes and clinkers not only through the spaces between the boxes, but also at the center of the producer and at all points around the fire-brick lining, thereby overcoming certain objections to producers which have heretofore been devised and which have twyer-boxes extending through the walls of the producer and projecting inwardly to or toward the center of the same, where they meet or abut against a central pier.

In producers of this class there is a tendency to a rapid formation of clinkers upon the lining of the producer over the twyer-boxes where the latter pierce the wall and also at the center of the producer, and while the latter masses can be broken up by the pokers the masses upon the side walls are difficult of access, and hence interfere with the proper operation of the producer. By so arranging the blast-boxes that the free descent of the ashes and clinkers at the center of the producer and around the walls of the same is permitted these objections are effectually overcome.

Each of the blast-boxes is closed at the top and at both ends and is also closed at the bottom, with the exception of a central opening 11, which communicates with an elbow-pipe 12, mounted upon a post 13 or other suitable support at the bottom of the producer, the horizontal member of this elbow-pipe passing through the wall of the ash-hopper and being provided at its outer end with a valve or plate 14, which can be readily opened and closed.

With the vertical member of each elbow-pipe 12 communicates some available form of air-blast apparatus 15, the ordinary form of blower using a steam-jet being preferred.

The opposite sides of each blast-box are provided with slots 16 for the escape of air into the mass of ashes in which the blast-boxes are embedded, the air then rising through the mass of fuel above the ash-bed, so as to gain access to all portions of the latter and maintain substantially uniform combustion throughout said mass.

By introducing the blast at the center of the blast-box I overcome an objection to that class of twyers in which the blast is introduced at one end and escapes through side openings in the twyers, for it has been found in practice that when the blast is thus introduced at one end or other of the twyer it does not issue uniformly therefrom. By in-

troducing the air at the center of each blast-box, however, a much closer approach to uniform distribution is attained.

The top of each blast-box is preferably rounded, so as to permit the ashes and clinkers to pass down over the same, and said top of the box is some distance above the tops of the slots 16, formed in the sides of the box, so as to provide an air-storage chamber or reservoir and maintain a substantially uniform pressure in the air-jets issuing from the slots 16.

The bottom of each blast-box tapers downwardly from the sides and ends toward the central opening 11. Hence any ashes finding their way into the blast-box through the side slots 16 will naturally seek said opening and drop into the elbow-pipe 12, from which they will be immediately discharged by the blast when the valve or door 14 is opened. The opening of this valve or door also provides a means of readily determining the strength of the blast when such information is desired.

When free-burning low-ash coals are used in the producer and the body of fuel is readily kept free from clinkers, the producer can be used without any sealing-pit at the bottom of the ash-hopper, for the air, aided by the natural draft of the producer, will more readily pass upward through the mass of fuel than downward through the mass of ashes packed in the converging ash-hopper; but when lean and poor coals carrying a heavy amount of silicious matter and mixed with sulfurous matter also are employed the combustion of the fuel requires a heavier blast and causes more rapid accumulation of cinders, and under such conditions it may be necessary to use a sealing-pit at the base of the ash-hopper in the usual manner.

Although I have shown in the drawings the use of three blast-boxes symmetrically arranged within the producer, more than this number may be used, if desired, or, on the contrary, but two may be employed without departing from the essential features of my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A gas-producer open at the bottom for the direct downward discharge of ashes and having in the lower portion of the same a series of blast-boxes separated from each other at the center of the producer so as to provide between their inner ends an intermediate space for the descent of ashes and clinkers, substantially as specified.

2. A gas-producer open at the bottom for the direct downward discharge of ashes and having in the lower portion of the same a series of blast-boxes which do not extend outwardly to the lining of the producer so as to provide for the descent of ashes and clinkers between said lining and the outer ends of the blast-boxes, substantially as specified.

3. A gas-producer open at the bottom for the direct downward discharge of ashes and having in its lower portion a series of blast-boxes separated from each other at their inner ends and terminating some distance from the lining of the producer so as to provide for the descent of ashes between their inner ends and also between their outer ends and said lining, substantially as specified.

4. A gas-producer open at the bottom for the direct downward discharge of ashes and having in its lower portion a series of blast-boxes disposed between the center and the walls of the producer and above the open bottom of the producer and each provided with a central blast-pipe leading downwardly from the bottom of the box, substantially as specified.

5. A gas-producer open at the bottom for the direct downward discharge of ashes and having a series of blast-boxes located in the lower portion of the same and above the open bottom and disposed between the center of the producer and the lining, each of said boxes having side outlet-openings and a central air-blast pipe leading downwardly from the bottom of the box, substantially as specified.

6. The combination with a gas-producer, of a blast-box located in the lower portion of the same, an air-supply pipe communicating with the bottom of said box, said air-supply pipe comprising a vertical member connected to the bottom of the box and a horizontal member connected to said vertical member by an elbow and projecting outwardly through the wall of the ash-hopper, and an air-blast-supply pipe located above and vertically in line with the said horizontal member and communicating with the said vertical member of said air-supply pipe at a point above the said elbow, substantially as described.

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

JAMES A. HERRICK.

Witnesses:
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