

E. A. W. JEFFERIES & G. H. ISLEY.

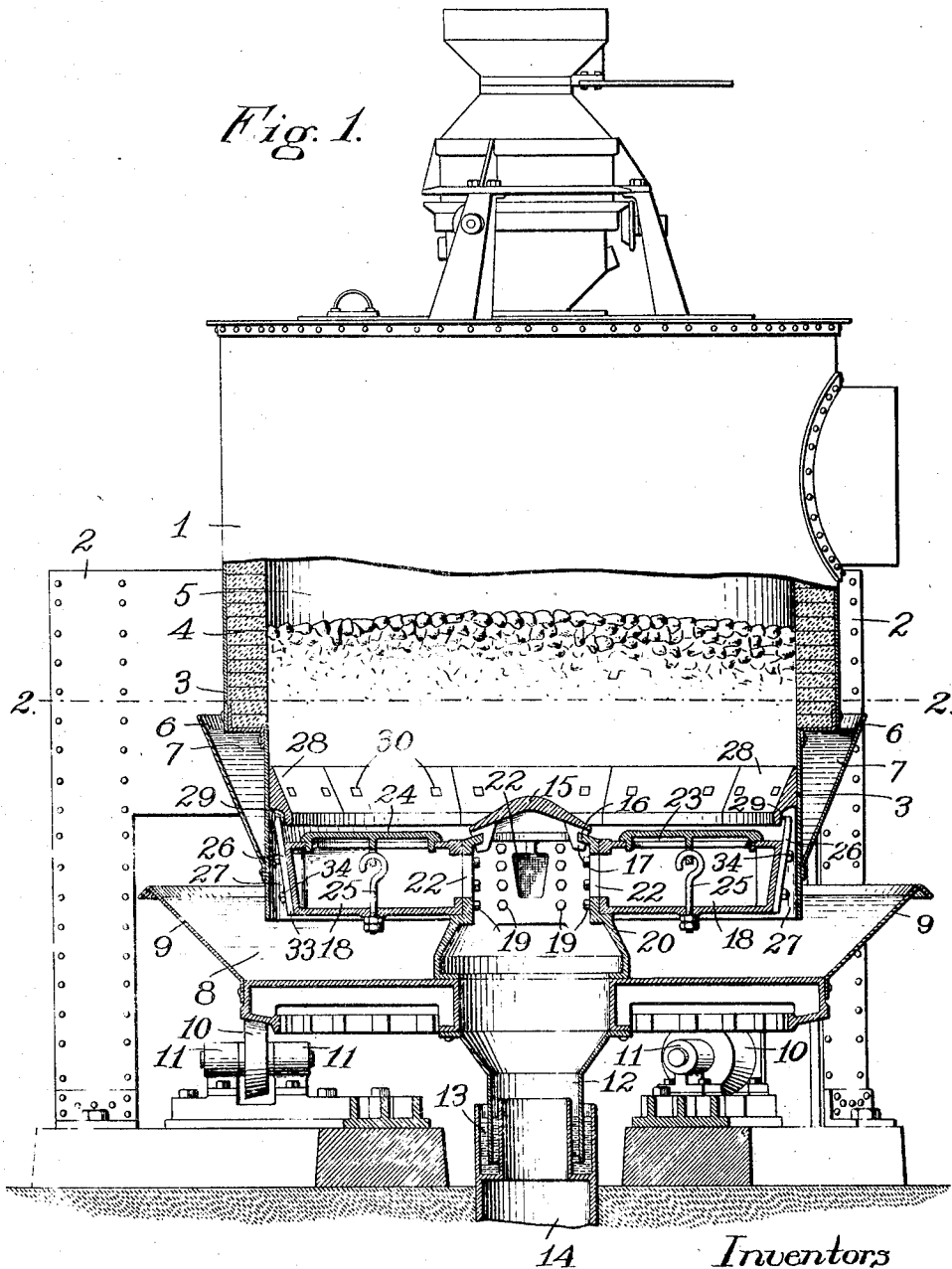
GAS PRODUCER.

APPLICATION FILED NOV. 23, 1910.

1,025,192.

Patented May 7, 1912.

2 SHEETS—SHEET 1.



Witnesses.

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2 SHEETS-SHEET 2.

Fig. 2.

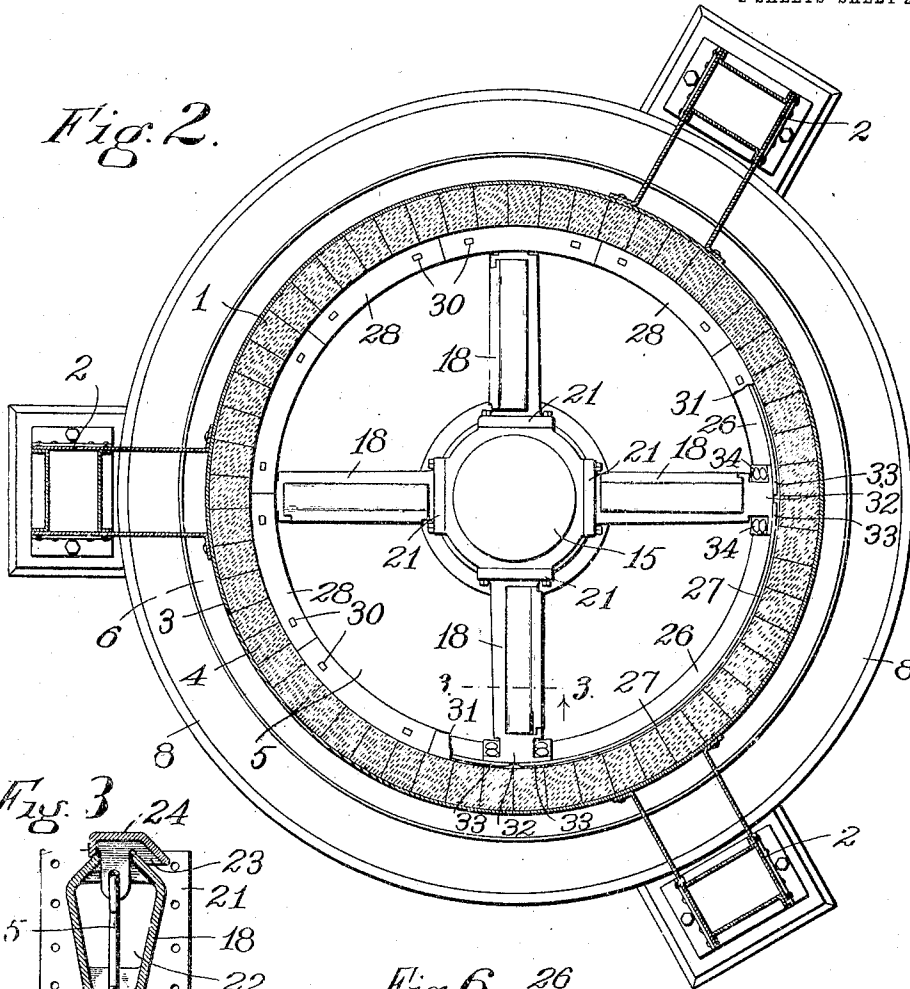


Fig. 3.

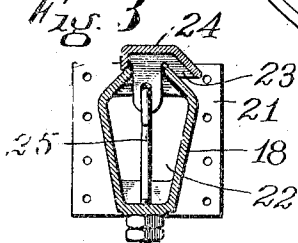
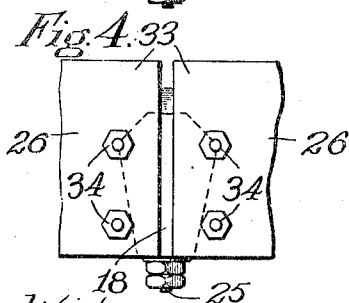


Fig. 4.



Witnesses.

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Develope Comberbach.

Fig. 6.

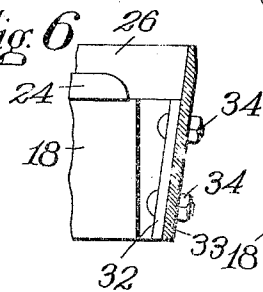
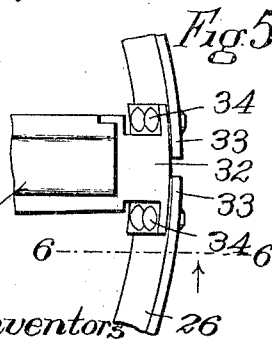


Fig. 5.



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UNITED STATES PATENT OFFICE.

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GAS-PRODUCER.

1,025,192.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed November 28, 1910. Serial No. 593,977.

To all whom it may concern:

Be it known that we, EBENEZER A. W. JEFFERIES and GEORGE H. ISLEY, both citizens of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Gas-Prod-
5ucers, of which the following is a specification, accompanied by drawings forming a
10 part of the same.

Our invention relates to simplified construction of gas producers, by means of which the efficiency is increased and a more uniform combustion is maintained in the
15 gas producing chamber; the caking of coal is prevented and the downward delivery of ashes from the producing chamber to the ash pan is controlled; and it consists in the construction and arrangement of parts as
20 hereinafter described and pointed out in the annexed claims.

Referring to the accompanying drawings, Figure 1 is a side elevation of a gas producer embodying our invention, with the
25 lower portion shown in central section. Fig. 2 is a plan view shown in section on line 2—2, Fig. 1. Fig. 3 is a sectional view of one of the revolving arms taken on line 3—3, Fig. 2, looking in the direction of
30 arrow. Figs. 4, 5 and 6 are detail views showing the method of union between the circular skirt and the end of the revolving arms.

Similar reference characters refer to similar parts in the different views.

In the drawings, the casing 1, preferably cylindrical, is supported upon columns 2. It consists of an outer metal shell 3, with the upper portion brick lined at 4, and in-
40 closing a gas producing chamber 5. At the lower portion of the chamber the brick lining 4 may be omitted, as shown, and the metal shell 3 brought into direct contact with the contents of the chamber. This
45 metal shell, in contact with the contents of the chamber, is preferably surrounded by an annular trough or water chamber 6, inclosing a surrounding body of water 7 by means of which the temperature of the
50 metal shell is reduced and the formation of clinkers on the inside of the shell is prevented.

Below the casing 1 is a rotating ash pan 8 of greater diameter than the lower end of

the casing and preferably provided with 55
flaring sides 9. The ash pan 8 is supported upon conical rolls 10 journaled in bearings 11 and may be rotated by any convenient means of rotation. Attached to and rotat-
60 ing with the ash pan 8 is a vertical pipe 12 for admitting a charge of air and steam to the interior of the gas producer. The pipe 12 has a water seal connection at 13 with a supply pipe 14. A dome or hood 15 is re-
65 movably attached to an internal rim 16 at the upper end of the pipe 12 by notched lugs 17. Radially projecting arms 18, in this instance four in number, are attached by bolts 19 to the upper end 20 of the pipe
70 12. The inner end of each arm is provided with a flange 21 and an opening 22 for admitting the charge of air and steam from the pipe 12 into the arms 18.

As shown in Fig. 3, each arm is provided at the top and on its rearward side with a 75
slit or opening 23 beneath a removable hood or cover 24 held in position by a hooked bolt 25 passing through the bottom of the arm 18. The arms 18 being attached to the ro-
80 tating pipe 12 will also revolve with the rotation of the pipe 12 and the ash pan 8, by means of which rotation the lower portion of the contents of the chamber 5 will be
85 carried by the revolving arms 18 more rapidly than the upper portion which is retarded by its friction with the walls of the chamber. This produces a plane of cleav-
age in the fuel mass in the gas producing chamber 5 and prevents the caking of the
90 coal.

As shown in Fig. 1, a circular skirt or retaining band 26, of a diameter slightly less than the diameter of the chamber 5, is inserted in the lower part of the chamber approximately in the plane of the revol-
95 ving arms. This skirt is preferably supported by attachment to the ends of the revolving arms 18 in a manner to be hereinafter described, and serves to provide revolving inclosures between the arms 18 and
100 skirt 26 to secure the ashes and prevent their outward or centrifugal movement due to the revolution of the arms 18, and to cause the ashes to be more readily delivered into the ash pan. The diameter of the skirt
105 26 is preferably gradually reduced from the top downward bringing its inner wall in an oblique position, as shown in Fig. 1,

to afford a partial support for the mass of ashes and fuel in the gas producing chamber above and bring the delivery of ashes toward the center of the ash pan. Between the circular skirt 26 and the metal shell 3, as shown in Fig. 1, is an annular space 27 gradually increasing in width toward the bottom of the skirt to allow clearance for ashes or clinkers which may enter between the skirt and the outer casing. Entrance to this space 27 is limited by a circular shield or hood 28 projecting downwardly on its inner side and inclosing the upper edge of the skirt 26, leaving only the restricted space 29 to limit the size of particles admitted to the ash pan through the annular space 27, and thereby prevent its stoppage or obstruction. This circular shield 28 is attached in sections to the metal shell 3 by bolts having their heads inserted in the rectangular openings 30, and in Fig. 2 a portion of these shields are removed between the lines 31, 31, in order to disclose the skirt 26. As shown in Fig. 2, the skirt 26 is also inserted in sections, in the present instance four in number, to correspond with the revolving arms 18, to the T-shaped ends 32 of which the ends 33 of the sections of the skirt 26 are attached by bolts 34, as shown in Figs. 4, 5 and 6.

In the operation of our improved gas producer, coal is fed in the usual manner at the top of the casing and a blast of air and steam is supplied through the pipe 12 and admitted through the openings 23 in the revolving arms 18 into the chamber 5 to support combustion. As the combustion proceeds the ashes and the solid products of combustion descend into the ash pan where they are crowded outwardly beneath the lower edge of the casing 1 and against the flaring sides 9 of the ash pan. The revolution of the arms 18 caused by their connection with the rotating pipe 12 causes the rotation of the lower portion of the contents of the casing more rapidly than the upper portion, thereby preventing the caking of the fuel. The contents of the chamber 5 are supported to some extent by the shield 28 and the skirt 26, both of which afford inwardly inclined surfaces for the support, as well as the downward guidance of the ashes. The centrifugal or outward movement of the ashes caused by the revolution of the arms 18 is restrained by the skirt 26 which may, as shown, be supported by attachment to the revolving arms, or if desired, it may be supported by standards resting upon the bottom of the ash pan. In either case the result is to afford revolving inclosures between the arms 18 and the skirt 26 within which the ashes are revolved at the bottom of the fuel mass, and all outward or centrifugal movement of the ashes is restrained.

The skirt 26 is contiguous to the inner wall of the casing and the water chamber 7 is extended below the upper edge of the skirt in order that it may serve to lower the temperature and preserve the skirt from excessive heat.

We claim,

1. In a gas producer, a stationary casing inclosing a gas producing chamber, a rotating ash pan spaced beneath said casing, means supported from the center of said ash pan for imparting a rotary movement to the lower portion of the contents of said casing, and means within said casing also supported from the center of said ash pan for restraining the centrifugal or outward movement of the contents of said casing.

2. In a gas producer, a stationary casing inclosing a gas producing chamber, a support extending from the center of said ash pan vertically into said chamber and arranged for the admission of steam and air to said chamber, means extending radially from said support for the passage of steam and air from said support to said chamber and also arranged to cause the rotation of the lower portion of the contents of said chamber, and means for restraining the centrifugal or outward movement of the contents of said chamber.

3. In a gas producer, a stationary casing inclosing a gas producing chamber, a rotating ash pan spaced beneath said casing, a vertical pipe supported by said ash pan and extending upwardly into said casing, arms connected with said pipe supported thereby and extending radially therefrom, and a circular skirt or restraining band connecting the ends of said arms.

4. In a gas producer, a stationary casing inclosing a gas producer chamber, a rotating ash pan spaced beneath said casing, a vertical central support extending vertically from said ash pan into said chamber and attached to said ash pan, horizontal inclosures extending radially from said support and open at the top and bottom, said inclosures arranged to rotate the lower portion of the contents of said chamber and deliver them to said ash pan.

5. In a gas producer, a casing inclosing a gas producing chamber, means within said casing for imparting a rotary motion to the contents of the lower part of said chamber, and a rotatable annular skirt or band inclosed in the lower part of the chamber and in the plane of said rotating means.

6. In a gas producer, a casing inclosing a gas producing chamber, arms inclosed in said chamber and rotatable about an axis concentric with said chamber, and a skirt or band carried by the ends of said arms.

7. In a gas producer, a casing inclosing a gas producing chamber, arms inclosed in said chamber and rotatable about an axis

concentric with the chamber, and a skirt or band attached to the ends of said arms.

5 8. In a gas producer, a casing inclosing a gas producing chamber, an annular water chamber surrounding the lower part of said casing, and an annular rotatable skirt or band inclosed in said casing with said water chamber extended below the upper edge of said skirt or band.

10 9. In a gas producer, a casing inclosing a gas producing chamber, hollow arms rotatable about an axis concentric with said

chamber and inclosed in the lower part of said casing, a skirt or band carried by the outer ends of said arms, an air supply pipe 15 communicating with the interior of said hollow arms, and means for distributing the air supply to said chamber.

Dated this 18th day of November, 1910.

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Witnesses:

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