

APPLICATION FILED NOV. 2, 1908.

Patented Jan. 18, 1910.

Fig. 1.

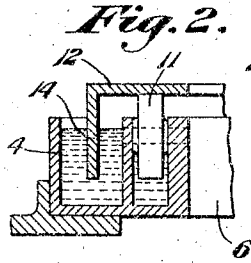


Fig. 2.

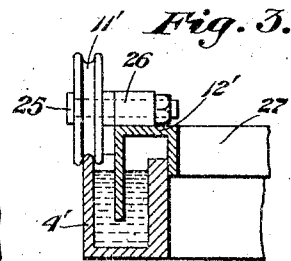


Fig. 3.

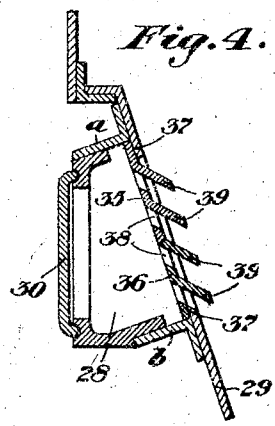
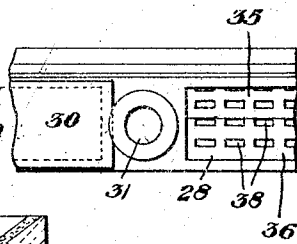
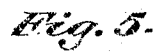


Fig. 4.



Chas. S. Ledy.
H. B. Bond.

The R. Miller
 by C. M. Clark
 His Attorney

W. R. MILLER.
GAS PRODUCER.

APPLICATION FILED NOV. 2, 1908.

947,118.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 2.

Fig. 6.

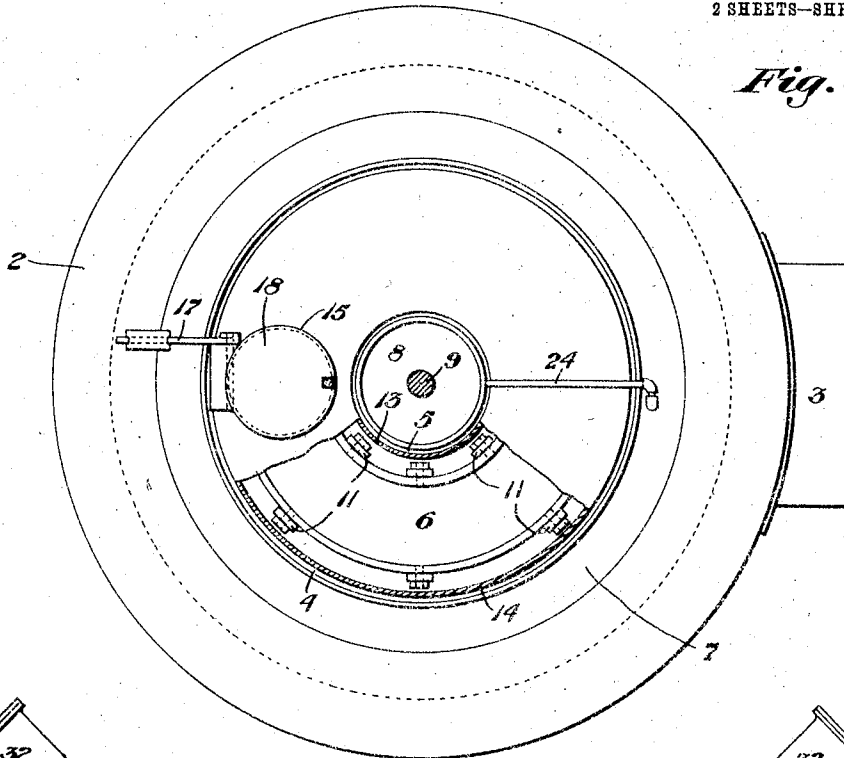
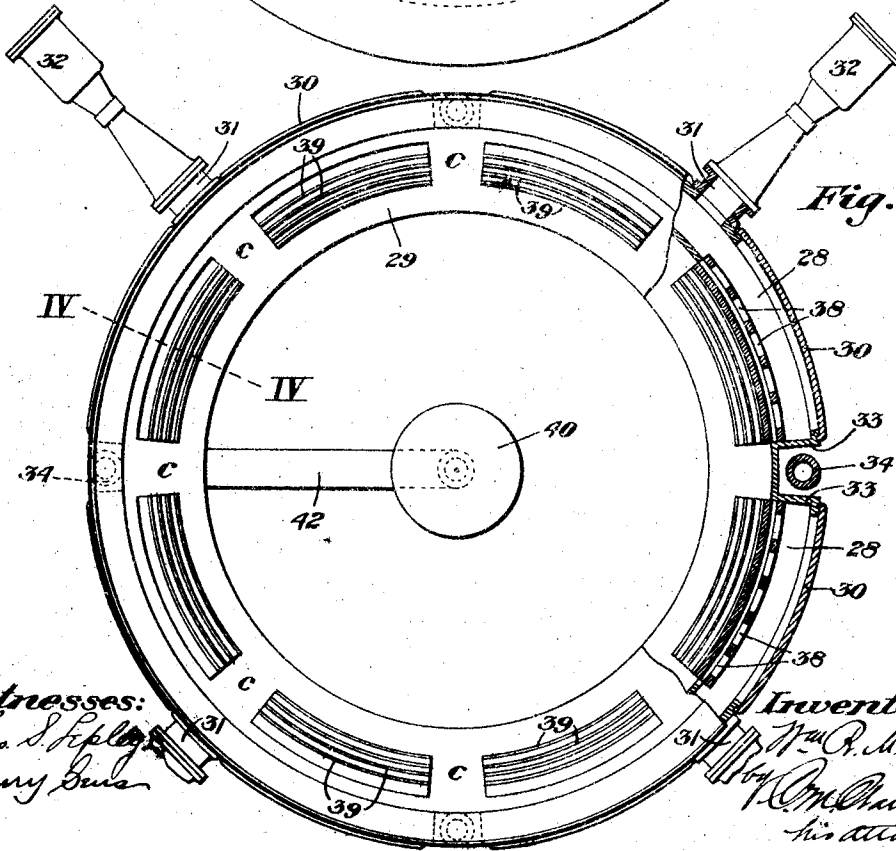


Fig. 7.



Witnesses:

Chas. S. H. [Signature]
Henry [Signature]

Inventor:

W. R. Miller
[Signature]
his Attorney

UNITED STATES PATENT OFFICE.

WILLIAM R. MILLER, OF PITTSBURG, PENNSYLVANIA.

GAS-PRODUCER.

947,118.

Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed November 2, 1908. Serial No. 460,736.

To all whom it may concern:

Be it known that I, WILLIAM R. MILLER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Prod-
5 Gas-Prod-ucers, of which the following is a specification, reference being had therein to the accompanying drawing.

10 My invention refers to the class of gas producers and consists of a producer having a movable hopper for distributing the coal annularly around the interior cavity, as shall be more fully hereinafter described.

15 The objects of the invention are to provide a water-seal top annularly mounted for rotation upon the upper portion of the producer having a lowering bell and hopper adapted to be filled at any suitable point and the annular top rotated and the coal discharged into the interior for the purpose of providing even distribution of the coal.

20 One preferred form of the producer is shown in the accompanying drawings, in which:
25

Figure 1 is a vertical sectional view through a producer provided with my improvements. Fig. 2 is a sectional detail view of the water-seal trough, cover and rolling bearings. Fig. 3 is a sectional detail view showing a modified construction of water-seal trough and supporting wheels for the rotatable top. Fig. 4 is an enlarged sectional detail view through the wind box, on the line IV. IV. of Fig. 7. Fig. 5 is a partial outside view from the rear, partly in section, showing the construction of the air-distributing box. Fig. 6 is a top plan view, partly broken away to show the water-seal trough and supporting rollers. Fig. 7 is a horizontal sectional view on the line VII. VII. of Fig. 1.

30 The producer 2 as shown in the drawings, is usually cylindrical in cross section, having a gas outlet opening 3 and a water-seal basin of well known construction. In producers of this class, particularly of large diameter, it is desirable to distribute the coal throughout the interior as evenly as possible for good operation, and my invention provides a rotatable top having a charging hopper adapted to be moved around the upper portion of the producer. For such purpose I have provided at the top of the
35 40 45 50 55 producer an annular water-seal trough 4 and an inner similar water-seal trough 5

concentrically located with relation to the producer and with each other, with an intervening continuous annular opening 6. Outer trough 4 is mounted upon a top plate 7 of ordinary construction, while the inner trough 5 is mounted upon a central circular plate 8 supported by any suitable means as a centrally depending hanger 9 depending from structural framework 10, or so made in any suitable manner as to rigidly and permanently support the plate 8 and its trough.

Both trough 4 and trough 5 are provided with outer and inner upwardly extending sides and walls, with an intervening water space, and also between said walls, with supporting rollers or casters 11 of any suitable construction and number, carried by the bearings as shown. Rotatably mounted on said rollers 11 is an annular plate 12 having a hollow center and in ring form so-as to provide a cover for the water-seal troughs, said plate having inner and outer downwardly extending flanges 13, 14, for immersion in the water, as will be readily understood.

15 is a charging hopper extending upwardly above and mounted upon plate 12 and provided with a lowering bell 16, which engages against the lower edges of the hopper shell, and which bell for such purpose is conical as is usually the case, it is rectangularly shaped so as to seal the hopper 15 until the bell is lowered by lever 17 and its operating connections, of well known construction. Hopper 15 is provided with the usual cover 18 for making a gas-tight seal and is adapted to be located beneath the outlet terminal 19 of a charging bin 20 and filled with coal, or coal may be charged in any other manner, the supporting ring 12 and hopper then being rotated either by hand or power, around to the desired position at one side or the other and discharged.

For the purpose of maintaining the water in each trough at the same level, and preventing overflow in either, a cross communicating pipe 21 may be used to connect the troughs at any point, and for the purpose of filling the troughs with water I employ a pipe 22 having branches 23, 24, respectively, for the outer and inner troughs; pipe 24 being, if desired, swiveled to the upper portion of the main supply pipe so that it may be thrown outwardly if desired. Said pipes and connecting pipe 21 are preferably lo-
100 105 110

cated at the same point so as to leave all other portions of the annular slot 6 open for rotation of the hopper and bell, and as thus arranged it will be seen that practically the entire area of the interior of the producer may be reached. It will also be understood that the rotatable top may be provided with two or more hoppers, whereby one may be filled while the other is being charged.

In Fig. 3 I have shown a modified construction in which the trough 4' is adapted to support the ring 12' upon the upper edge of its outer wall by means of the series of ground wheels or rollers 11' carried on studs 25 in upwardly extending brackets or lugs 26, the same construction being provided for the inner trough 5. I also provide an inner downwardly extending flange 27 of the traveling ring 12, lapping over the inner wall of each trough at each side of the annular opening 6, whereby the trough is completely protected from dust, etc., as well as the generated heat. For the purpose of supplying air to the base of the producer, I provide a series of wind boxes 28 of generally segmental form and preferably four in number, arranged annularly around the outer portion of the lower terminal shell 29 of the producer, said wind boxes being constructed in the manner shown in Figs. 1, 4 and 7, of suitably formed plates or castings *a, b*, extending outwardly above and below and at each end of annular horizontal slot-like openings, correspondingly arranged around and through the shell 29, at the zone of the desired air supply. The outer portions of said segmental boxes are closed by covering doors 30 at each side of a main supply connection 31 opening inwardly through the middle portion of each box, as shown in Figs. 5 and 7, receiving air from blower 32, so as to distribute the air, or air and steam, to each side of such box. The ends of the boxes are closed by end walls 33 located sufficiently apart from each other to provide clearance for the main supporting posts 34. The wind boxes as thus constructed extend outwardly beyond the horizontal slot-like openings through shell 29 above referred to, and said openings are filled by my improved twyers adapted to provide ample circulating space for the air from the boxes to the interior and to protect the air openings from the ashes, fuel in combustion, etc. For such purpose the twyers consist of preferably two sections 35, 36, for convenience of insertion or removal, fitting inwardly against the outer terminal edges 37 of shell 29 defining said slot-like openings, and constituting continuations of the shell. Sections 35 and 36 are made in pairs and are each provided with series of air-inlet openings 38 thus arranged when in position horizontally around

the base of the producer and constituting when in action, a practically continuous air-supply zone. It will be observed however, that between each pair of such sectional twyers and also between each of the wind boxes, are plane portions *c* of shell 29 whereby frequent continuous sections of the shell intervene between each set of twyer sections. By this construction shell 29 is stiffened against deflection, the twyer sections are frequently interrupted by said plane portions, and the general construction and operation improved.

Extending inwardly and downwardly from sections 35 and 36 and preferably immediately above each series of air openings 28, are protecting covers 39 of shelf-like form, as clearly shown in Figs. 1 and 4. By this arrangement the air openings are prevented from clogging, the air is deflected inwardly and downwardly toward the center of the combustion chamber, and it will be seen that in the case of burning out, breakage or for any other reason, one or more of the twyer sections may be readily removed and replaced, by merely opening door 30 or disconnecting the parts of the box.

40 is a centrally arranged cone mounted upon the upper end of an air supply post 41, connected with a blower by lateral connection 42, of well known construction and not constituting, *per se*, any part of the present invention, inasmuch as the operation of the wind box will be equally successful either with or without such device.

The operation and advantages of the invention will be readily understood and appreciated by all those familiar with gas producer construction and operation, inasmuch as it avoids the necessity of poking the fuel or of leveling it by any of the usual devices employed. The even distribution of the fuel improves the manufacture of the gas; the arrangement of the wind boxes in sections permits of varying the supply at one side or the other if desired; while the construction as a whole is comparatively simple and cheap and well adapted to the objects in view.

It will be understood that the invention may be variously changed or modified in construction or different features of detail by the skilled mechanic or adapted to other uses than that of the manufacture of gas, but all such changes are to be considered as within the scope of the following claims.

What I claim is:—

1. A gas producer provided with a cover embodying an inner and outer annular support with an intervening continuous annular opening, and a rotatable cover plate thereon having a fuel distributing device, and means suspending the inner annular support, substantially as set forth.

2. A gas producer provided with a cover embodying an inner and outer annular support with an intervening continuous annular opening, a rotatable cover-plate thereon having a fuel distributing device, means providing a water-seal joint between the support and said plate, and means suspending the inner annular support, substantially as set forth.

3. A gas producer provided with a centrally arranged cover-plate, a surrounding plate with an intervening continuous annular space, a rotatable cover-plate mounted thereon provided with means for distributing material through said annular space, and means suspending the inner annular support, substantially as set forth.

4. A gas producer provided with a centrally arranged cover-plate having an annular water-seal trough, a surrounding plate having a similar trough and embracing an intervening continuous annular space, a cover-plate mounted on said plates provided with means for distributing material through said annular space, and means suspending the inner annular support, substantially as set forth.

5. A gas producer provided with a centrally arranged cover-plate having an annular water-seal trough, a surrounding plate having a similar trough and embracing an intervening continuous annular space, means providing rolling bearings, a cover-plate mounted on said bearings provided with means for distributing material through said annular space, and means suspending the inner annular support, substantially as set forth.

6. A gas producer provided with a centrally arranged cover-plate having an annular water-seal trough, a surrounding plate having a similar trough and embracing an intervening continuous annular space, a cover-plate mounted on said plates provided with means for distributing material through said annular space, and having annular water-seal flanges co-acting with said troughs, and means suspending the inner annular support, substantially as set forth.

7. A gas producer provided with a centrally arranged cover-plate having an annular water-seal trough, a surrounding plate having a similar trough and embracing an

intervening continuous annular space, a cover-plate mounted on said plates provided with means for distributing material through said annular space, and having annular water-seal flanges co-acting with said troughs, and inner overlapping flanges, and means suspending the inner annular support, substantially as set forth.

8. A gas producer provided with a centrally arranged cover-plate, a surrounding plate with an intervening continuous annular space, a rotatable cover-plate mounted thereon provided with a charging hopper and bell, and means suspending the inner annular support, substantially as set forth.

9. In a gas producer, the combination of a centrally suspended cover-plate having an outer water-seal trough, a surrounding plate having an inner water-seal trough and providing an intervening continuous annular space, and a rotatable cover-plate provided with water-seal flanges and a charging hopper mounted on said plates, substantially as set forth.

10. In a gas producer, the combination of a centrally suspended cover plate having an outer water-seal trough, a surrounding plate having an inner water-seal trough and providing an intervening continuous annular space, and a rotatable cover-plate provided with water-seal flanges and a charging hopper mounted on said plates, with intervening rolling bearings, substantially as set forth.

11. In a gas producer, the combination with inner and outer annular plates having water-seal troughs on the same level and separated by an intervening continuous annular space, of a connecting over-flow pipe, substantially as set forth.

12. In a gas producer, the combination with inner and outer annular plates having water-seal troughs on the same level and separated by an intervening continuous annular space, of a supply pipe having branch connections for each trough, substantially as set forth.

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

WILLIAM R. MILLER.

Witnesses:

C. M. CLARKE,
CHAS. S. LEPLEY.