L. F. BURGER.

GAS PRODUCER.

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925,621. **Patented June 22, 1909.**

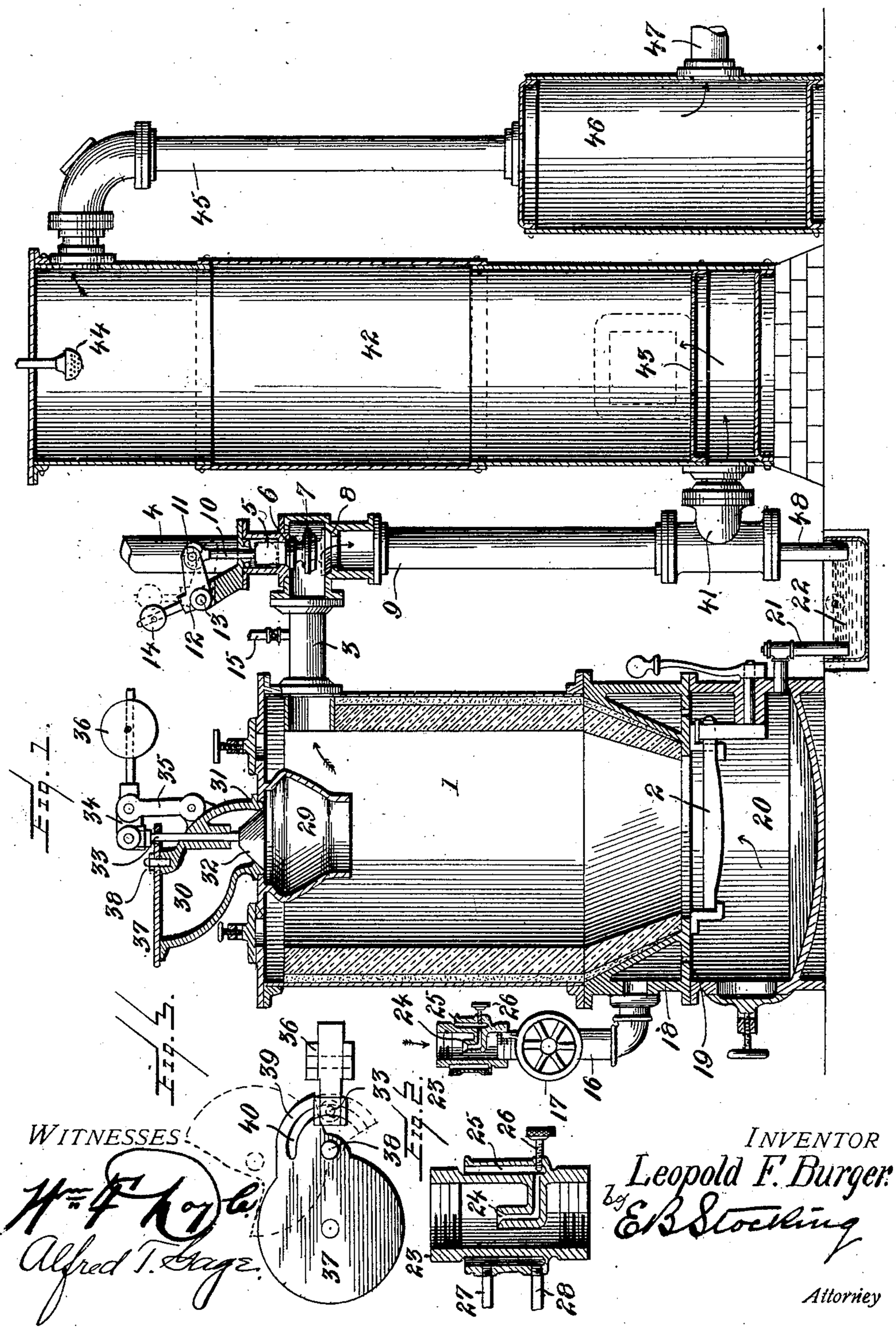

FIG. 1.

FIG. 4.

WITNESSES:

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GAS-PRODUCER.

No. 925,621. Specification of Letters Patent. Patented June 22, 1909.

Application filed March 27, 1907. Serial No. 364,876.

To all whom it may concern:

Be it known that I, LEOPOLD F. BURGER, a citizen of the United States, residing at Beloit, in the county of Rock, State of Wisconsin, have invented certain new and useful Improvements in Gas-Producers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a gas producer, and particularly to a construction of feed hopper therefor.

The invention has for an object to provide a novel and improved construction of hopper having an inlet valve and a pivotally mounted lid provided with locking means adapted to embrace the valve stem and prevent the opening of the valve when the lid is swung from the hopper.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings:—Figure 1 is a vertical section through the producer and associated apparatus; Fig. 2 is an enlarged detail vertical section through the water inlet device, and Fig. 3 is a top plan of the hopper cover and valve connection.

Like numerals of reference indicate like parts in the several figures of the drawing.

The numeral 1 designates the producer which may be of any desired construction, and is provided at its lower portion with a grate 2 upon which the coal or other gas producing material rests when ignited. The upper portion of this producer is connected by a pipe 3 with the vent pipe 4 provided with a double valve 5 adapted to engage in its upward movement the seat 6 communicating with the vent pipe, while in its downward movement the valve face 7 will engage the seat 8 at the upper end of the gas conveying pipe 9. The stem 10 of this valve is pivotally connected at its upper end 11 with the crank lever 12 pivoted at 13 upon a bracket and provided with a holding weight 14 adapted to seat the valve tightly upon either of its seats as it is shifted past the center. When the valve is thrown in the position shown in dotted lines in Fig. 1 the vent is open to permit the escape of smoke and undesired gases after the fire is started, and after the proper production of gas begins the valve is shifted to the full line position so that the gas passes through pipe 9. The connecting pipe 3 is provided with a test light connection 15 of the ordinary character.

The air introduced beneath the grate 2 is drawn or blown inward through pipe 16 supplied with the controlling valve 17 of any desired character and enters a heating chamber 18 which surrounds the fire pot of the producer and is provided with the perforated bottom wall 19 through which the air passes into the ash pot 20 beneath the grate and thence upward through the grate. This pot is provided with a draw off connection 21 leading to a water trap 22 for the purpose of removing any excess of water therein. It is desirable to introduce with the air a predetermined percentage of water and this is very effectually accomplished by means of the improved inlet device 23 which is provided at the center thereof with the upwardly extending discharge pipe or nozzle 24 communicating with the chamber 25 surrounding the inlet, said nozzle being controlled by a valve 26. The water supply in this chamber is maintained at a predetermined level by means of the pipes 27 and 28 communicating therewith, as shown in Fig. 2. This provides means by which the water is maintained at a constant level and the overflow thereof controlled so that the predetermined percentage of water may be introduced into the air drawn into the producer.

The upper portion of the producer is provided with a feed neck 29 communicating with the hopper 30 above the same, said hopper being provided with a valve seat 31 at its lower portion adapted to be controlled by a valve 32 of the usual construction. The stem 33 of this hopper valve is pivotally connected to the lever 34 which is mounted upon the link 35 carried by the hopper casing and provided with the controlling weight 36 to normally hold the hopper valve in closed position. The upper face of the hopper is provided with a lid or cover 37 pivotally mounted at 38 to swing in a horizontal plane, said lid being provided with an extension 39 having a curved or segmental slot 40 therein, the walls of which embrace the stem 33 of the valve as the cover is swung open into the dotted line position shown in Fig. 3, while when the cover is closed in the full line position this extension clears the stem and permits the necessary downward movement of the valve to feed the material into the pro-

ducer. This construction absolutely prevents the opening of the hopper valve when the cover is open which would be very dangerous as an inflow of fresh air would be conducted into the producer.

The conveying pipe 9 from the producer is connected at its lower portion 41 with the scrubber 42 which is provided at its lower portion with the perforated grate 43 upon which a bed of coke or other desired material is adapted to rest for producing the usual scrubbing action, while in the upper portion of this scrubber is provided a sprayer 44 for the introduction of water therein. The conducting pipe 45 extends from the upper portion of scrubber to the drying tank 46 which is in communication with the suction of the engine or other device to be fed by means of the pipe 47. For the purpose of draining any water which may collect in the scrubber the coupling 41 is provided with the discharge pipe 48 leading into the water trap 22 previously described.

In the operation of the invention it will be seen that the air as drawn into the producer is charged with the desired amount of water which is under constant control relative to the load upon the engine. This water is then converted into steam and the latter passed through the material in the producer where the steam is decomposed into hydrogen and oxygen gases which with the air keep the fire in proper condition to produce gas of uniform quality at the top of the producer. From this point it passes downward into the scrubber whereby the impurities are removed from the gas and the latter is then carried to the drying tank from which it is fed to the engine. It will be seen that the evaporating chamber directly surrounding the fire box of the producer provides means for quickly converting the water into steam before its introduction into the material therein, while the vent valve is automatically balanced and held in either of its adjusted positions so that when starting the producer the smoke and undesired gases may be allowed to escape, and later the valve shifted to the full line position so as to permit the desired gas to pass to the scrubber. The hopper construction effectually provides means for locking the valve when the cover is opened to fill the hopper with coal and thereby prevents any possibility of accident through the introduction of air or a back blast from this point.

I claim:—

1. In a gas producer, a hopper therefor, a valve therein having a reciprocating stem, a lid for said hopper movable in a plane transversely of said stem, and means upon said lid to engage the stem and lock said valve when the lid is open.

2. In a gas producer, a hopper therefor, a valve therein having a reciprocating stem, a lid for said hopper movable in a plane transversely of said stem, and a locking member upon said lid movable into the path of travel of a portion of said stem.

3. In a gas producer, a hopper therefor, a valve therein having a reciprocating stem, a lid for said hopper movable in a plane transversely of said stem, a lever connection with the upper end of said stem, and an extension beyond the pivot of said lid movable beneath said connection as the lid is opened.

4. In a gas producer, a hopper, a valve therefor, and a pivoted lid for said hopper provided with extensions to embrace the stem of said valve when the lid is opened.

5. In a gas producer, a hopper, a slidingly mounted valve disposed at the lower portion thereof, a weighted lever connected with the stem of said valve, a pivotally mounted lid over said hopper, and an extension from said lid provided with a segmental slot adapted to embrace the stem of the valve in the rotative movement of said lid.

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

LEOPOLD F. BURGER.

Witnesses:

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