No. 871,428. PATENTED NOV. 19, 1907.

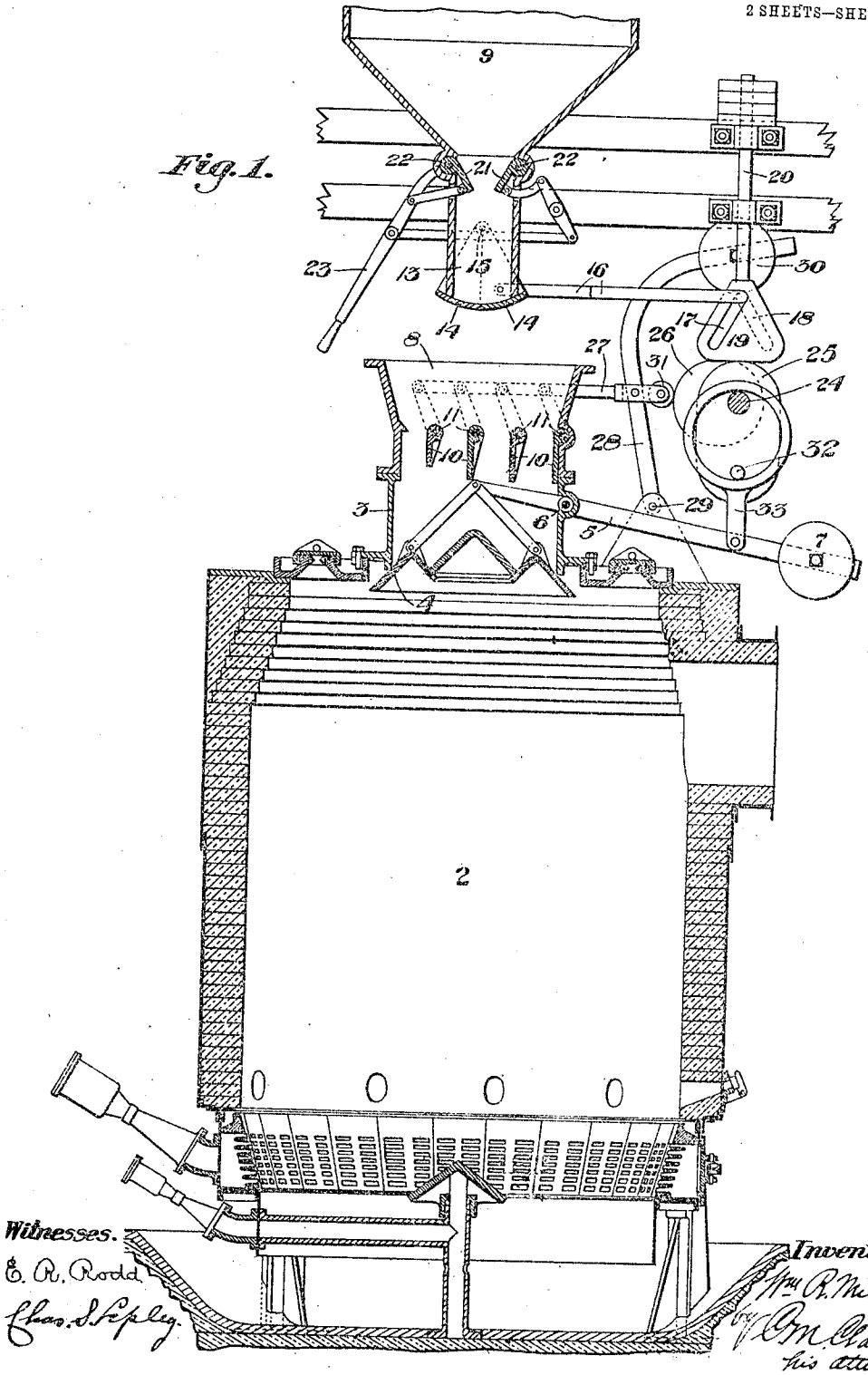
W. R. MILLER.

FEEDING APPARATUS FOR GAS PRODUCERS.

APPLICATION FILED DEC. 5, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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2 SHEETS—SHEET 2.

Fig. 2.

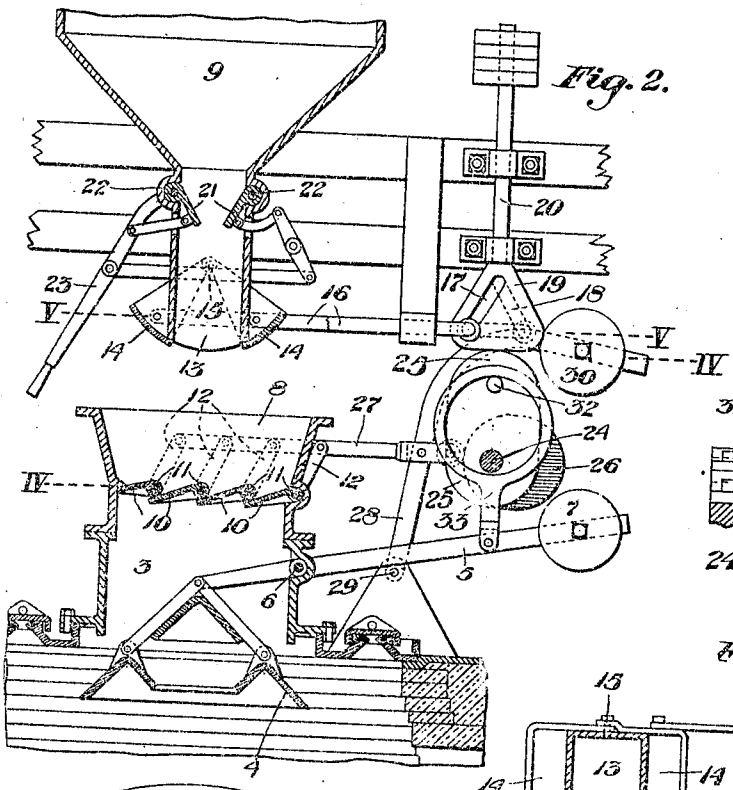


Fig. 3.

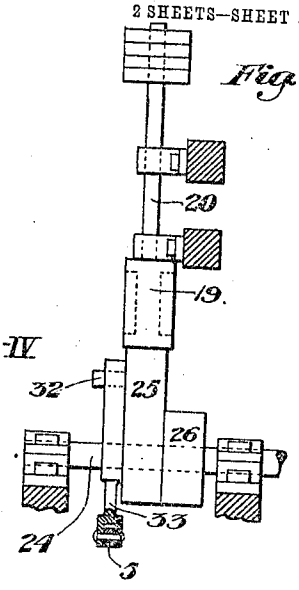


Fig. 5.

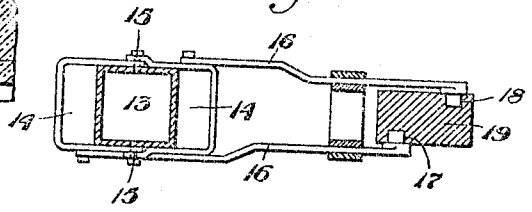


Fig. 4.

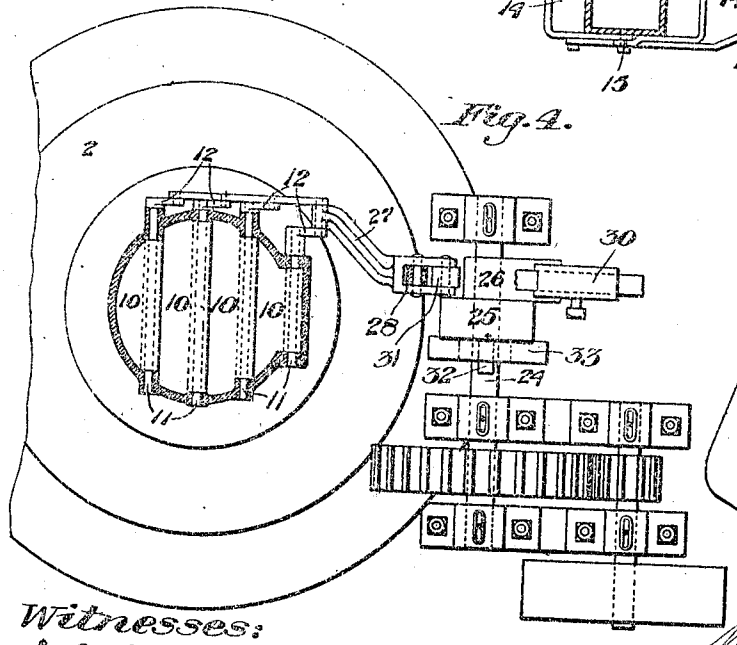
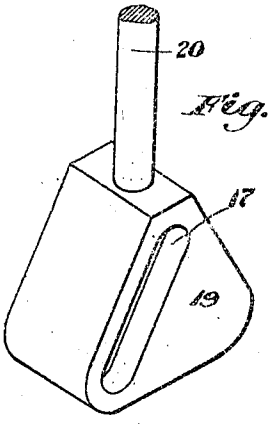


Fig. 6.



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Inventor:
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UNITED STATES PATENT OFFICE.

WILLIAM R. MILLER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE FORTER MILLER ENGINEERING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FEEDING APPARATUS FOR GAS-PRODUCERS.

No. 871,425. Specification of Letters Patent. Patented Nov. 19, 1907.

Application filed December 5, 1905. Serial No. 290,342.

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 Feeding Apparatus for Gas-Producers, of which the following is a specification, reference being had therein to the accompanying drawing, forming part of the specification, in which—

Figure 1. is a vertical sectional view of a gas producer provided with my improved feeding apparatus. Fig. 2. is a similar view of the upper portion of the structure showing the parts in different position. Fig. 3. is a detail side view of the actuating cam mechanism. Fig. 4. is a horizontal sectional view on the line IV. IV. of Fig. 2. Fig. 5. is a similar view on the line V. V. of Fig. 2. Fig. 6. is an enlarged detail view of the hopper door-actuating cam.

My invention refers to improvements in the class of feeding mechanism for gas producers, furnaces, or similar structures wherein it is desirable to charge measured quantities of fuel or other material into the furnace chamber periodically from time to time, and the objects in view are to provide an actuating mechanism for the different opening elements, *i. e.* valves, gates, bell, etc. so that the measured charges of fuel may be dropped from time to time from the storage hopper or bin upon supporting gates or valves intermediate of the hopper and producer, from thence to the gate or bell opening into the producer itself, and from thence into the producer, in such a manner as to keep the producer sealed against loss of gas. I accomplish these results through a single actuating element operating said doors, etc. at the proper time and through the mechanism hereinafter described.

Referring now to the drawings, 2 represents the producer structure which is usually cylindrical in form and is provided at its upper portion with the usual receiving hopper 3 and lowering bell 4 actuated through lever 5 pivoted at 6 and provided with a counterweight 7.

Superimposed above the hopper 3 is supplemental receiving hopper 8 intermediate of the producer and the coal storage bin 9 provided with a series of opening and closing gates 10 mounted upon rock shafts 11 and provided at one side with a series of actuating arms 12. The hopper 9 is provided with a reduced discharge spout 13 adapted to discharge directly into hopper 8 and provided with opening and closing doors 14, 14, hinged at 15 and operated through pitmen 16 the terminals of which, preferably provided with rollers, engage the cam grooves 17, 18, of a vertically reciprocating cam 19 mounted by stem 20 in suitable guiding bearings.

The grooves 17, 18, of cam 19, shown in detail in Fig. 6, are oppositely sloped and preferably arranged on opposite sides so that when the cam is raised one of the pitmen 16 connected to one of the doors 14 will be forced in the opposite direction, opening the doors as shown in Figs. 2 and 5. On reverse movement of the cam and pitmen the doors will be reversed, closing them as in Fig. 1.

The throat of spout 13 is preferably provided with means for varying its cross area so as to control the flow of the coal, for which purpose I employ adjustable gates 21 hinged in the sides of the spout at 22 and set inwardly to varying positions by means of adjusting lever 23 pivoted to one of shafts 22 and the connected lever mechanism by which both gates are simultaneously adjusted inwardly and outwardly. By this means the flow of the coal downwardly to the spout may be regulated so as to charge an approximately measured quantity thereinto which is discharged by the gates 14 at regular intervals. It will be also understood that the coal storage hopper may be dispensed with and the coal charged into hopper 8 in any other manner, as by shovels or barrows, so that said hopper is not necessarily included as an element of the invention.

It is desirable to open gates 14 and to lower the bell 4 during the closed period of the intermediate gates or valves 10, and to open said gates 10 during the closed period of the gates 14 and bell 4, as indicated in Figs. 1 and 2 of the drawings, so that the flow of coal to the producer is entirely cut off during the lowering of the bell. For such purpose I preferably employ a single actuating element as shaft 24 from which through cams mounted thereon, the different motions are produced. For the purpose of raising cam 19, which falls by gravity, I

provide the cam 25 secured upon the shaft, a similar cam 26 being arranged to actuate valves 10 through arm 27 connected with the lever arms 12 as clearly shown, said arm being connected with a lever 28 pivoted at 29, provided with a counterweight 30 tending at all times to throw said lever outwardly toward cam 26, a roller 31 or any suitable bearing portion being connected with said lever and arm, against which cam 26 will bear in its rotation.

The lever 5 of producer bell 4 normally holds the bell closed by reason of the counterweight 7, and is raised to lower the bell at the proper time by means of a cam abutment 32 adapted to actuate said lever 5 through a connecting link 33 or other equivalent means attached to the lever. The abutment 32 may be in the form of a pin or other suitable device located eccentric to shaft 24 and extending outwardly from the side of cam 25. These different actuating mechanisms are so arranged and timed that they will produce the opening and closing of the gates in the order stated, the operation being continuous and automatic.

It will be understood that shaft 24 may be driven at suitable speed through any convenient form of gearing or driving mechanism, as indicated in Fig. 4, while the various motions and the times of their operation may be suitably regulated by the designing engineer.

The invention may be applied to any desired form of structure, or it may be changed or varied in different details by the skilled mechanic, but all such changes or variations are to be considered as within the scope of the following claims.

What I claim is:—

1. The combination with a fuel-consuming structure having a hopper provided with a lower emptying valve and upper receiving valves, of a superimposed vessel provided with bottom-closing valves, and co-acting cam-devices for operating all of said valves, substantially as set forth.

2. The combination with a fuel-consuming structure having a hopper provided with a lower emptying valve and upper receiving valves, of a superimposed vessel provided with bottom-closing valves, and co-acting cam-devices for opening said bottom-closing valves and lower emptying valve during the closed period of the receiving valves, substantially as set forth.

3. In a gas producer, the combination with a hopper having a charging bell, and superimposed receiving valves, of an upper charging hopper having a valve-controlled bottom, and co-acting cam-devices for opening and closing said bell, receiving valves, and valve-controlled bottom, whereby a charge of fuel may be successively delivered from the upper hopper upon the receiving valves; from said valves to the bell; and from the bell to the interior of the producer, substantially as set forth.

4. In a gas producer, the combination with a hopper having a charging bell, and superimposed receiving valves, of an upper charging hopper having a valve-controlled bottom, co-acting means arranged to operate said valves, and cam devices for actuating said valve-operating means so designed that a charge of fuel may be successively delivered from the upper hopper upon the receiving valves; from said valves to the bell; and from the bell to the interior of the producer, substantially as set forth.

5. The combination with a fuel consuming structure having an emptying valve discharging into the interior of the structure, of a stationary superimposed vessel provided with vertically pendent swinging bottom closing valves, upper inwardly and outwardly adjustable flow controlling gates, and co-acting cam devices for operating all of said valves and means for adjusting the flow controlling gates.

6. The combination with a fuel consuming structure having a hopper provided with a lower emptying valve and superimposed receiving gates, of a superimposed charging hopper provided with opening and closing doors, and co-acting cam devices for actuating said valve, gates and doors respectively.

7. The combination with a fuel-consuming structure having a hopper provided with a lower emptying valve, of a superimposed charging hopper provided with inwardly and outwardly adjustable flow-controlling gates, mechanism for operating said gates, and lower opening and closing doors, substantially as set forth.

8. The combination with a fuel-consuming structure having a hopper provided with a lower emptying valve, of a superimposed charging hopper provided with inwardly and outwardly adjustable flow-controlling gates, mechanism for operating said gates, and lower opening and closing doors, with cam mechanism arranged to actuate said doors, substantially as set forth.

9. The combination with a fuel-consuming structure having a hopper provided with a lower emptying valve, of a superimposed charging hopper provided with opening and closing doors, and co-acting cam devices for actuating said valve and doors, substantially as set forth.

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

WILLIAM R. MILLER.

Witnesses:
CHAS. S. LEPLEY,
A. K. BARKER.