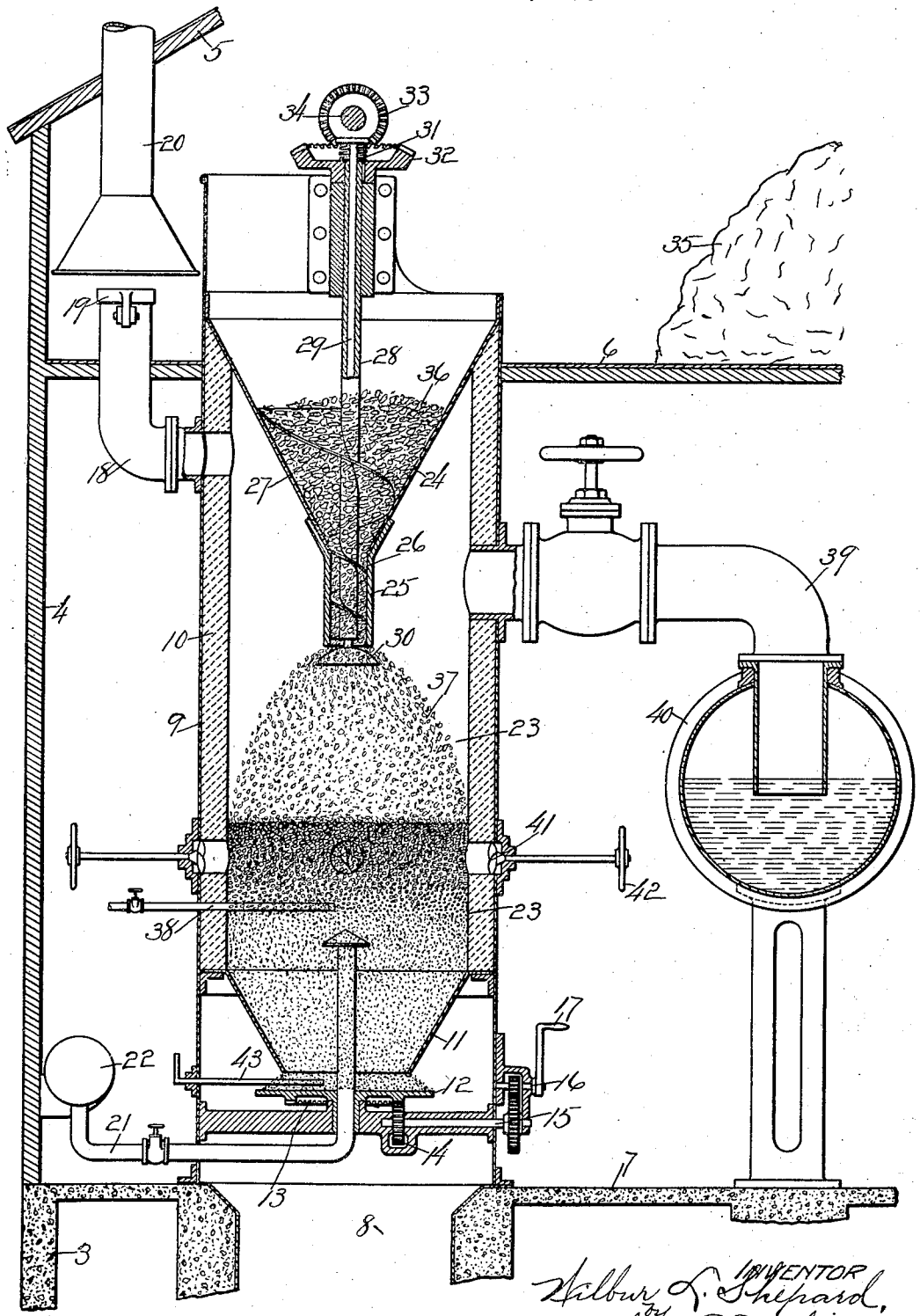
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GAS PRODUCING APPARATUS

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GAS-PRODUCING APPARATUS.

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My invention relates to the class of devices that are employed in the making of gas, more especially from peat, and an object of my invention, among others, is to provide a device of this class having improved means for preventing the escape of gas whether or not the apparatus is in operation.

One form of device embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawing, in which—

The figure is a view in vertical central section through an apparatus embodying my invention.

In the accompanying drawing the numeral 3 denotes the foundation of a building that may be made of concrete or other suitable material, and 4 one of the walls of a building that rests upon said foundation, 5 a portion of the roof of said building, and 6 a floor located at a suitable distance above the ground floor 7. A pit 8 is formed in the floor 7 and a gas producer is located over said pit.

This producer comprises a shell 9 having a lining 10 of any suitable heat resisting material. An ash pot 11 comprising sloping side walls is located at the lower part of the producer and is underlaid by an ash plate 12 having a rack 13, the teeth of which mesh with a pinion 14 secured to a shaft 15 connected by intermeshing gears with an operating shaft 16 that may be rotated as by means of a handle 17.

An outlet pipe 18 extends through the side of the shell near the top and is provided with a safety valve 19 at its upper end, said pipe opening underneath and into the flared mouth of a stack 20 that extends upward through the roof 5. A blast pipe 21 extends from a compressed air or oxygen receptacle 22 into the gas generating chamber 23 that comprises the space within the jacket just above the ash pot.

All of the parts thus far described are of old and well-known construction and only in connection with parts to be hereinafter described form no part of the present invention.

A fuel hopper 24 depends into the upper end of the producer 9, said hopper decreasing in size toward its lower end and terminating in a delivery pipe 25. A feed worm is located within the hopper at its lower end, this worm comprising a cylindrical portion 26 located within the pipe 25 and a flared portion 27 located in the flared portion of the hopper 24. The shaft 28 of this worm is tubular to receive the stem 29 of a valve 30, said stem extending through the shaft to locate the valve 30 in position to close the end of the delivery pipe 25. A spring 31 operates upon the stem 29 to normally close the valve 30.

A gear 32 is secured to the shaft 28 and operates by means of a pinion 33 to rotate the worm, said pinion 33 being secured to a shaft 34 that may be rotated by power applied from any desired source.

In operation a portion of a mass 35 of peat deposited on the floor 6 is shoveled into the hopper 24 and in operation the worm breaks up this mass of peat to some extent and gradually feeds it downwardly, forcing it through the delivery pipe 25. This pressure upon the mass of peat 36 within the hopper and at the end of the pipe 25 causes the valve 30 to open to permit escape of the peat into the gas generating chamber 23. The mass 37 of peat within the gas generating chamber is kept in a condition of partial combustion, it being preliminarily ignited as by means of flame applied to a gas pipe 38 extended into the bottom portion of the gas generating chamber, the gas being turned off when the peat has been sufficiently ignited. The gas given off by this partial combustion of the peat and which is combustible, passes outwardly through a gas outlet pipe 39 into a hydraulic main 40 from which it may be delivered to any suitable point for consumption. During the preliminary ignition the initial products of combustion with the flame pass out through the pipe 18 at which time the safety valve 19 is open. This valve is afterward closed and then air is admitted through the pipe 21 to effect the production of gas by partial combustion, which gas passes out through the outlet 39.

In order to break up the mass within the gas generating chamber, should such mass become unduly hardened, breakers 41 are located within recesses in the jacket forming the lining of the gas generating chamber, said breakers being provided with stems having hand wheels 42 by means of which the breakers may be turned. These breakers are in the form of worms, so that by turning them

in one direction, they will gradually feed their way into the mass opposite said recesses and thus break up said mass.

A scraper 43 is extended into the space between the plate 12 and the lower edge of the ash pot 11 for the purpose of scraping the ashes off from said plate when the latter is rotated.

While I have described my invention in the specification herein as applied to the treatment of peat for the production of gas, it will be understood that it may be equally well applied to the treatment of any other suitable material.

My improved apparatus is designed for the treatment of peat, as by ignition thereof, to produce gas therefrom suitable for subsequent use for heating or other analogous purposes. The peat is supplied to the hopper 24 by dumping such peat into the mouth of the hopper as by wheelbarrow or other suitable devices. This peat supplied to the hopper contains more or less moisture and the apparatus is therefore arranged by locating the hopper in the gas generating chamber and by tapering its walls to provide a heating area so that the heat required to gasify the fuel will aid in drying the fuel within the hopper to a greater or lesser extent.

The condition of the peat, by reason of the moisture content and otherwise, is such as to require forcible feeding, as by the worm —26—27—to supply it to the gas generating chamber.

Oxygen is supplied to the generating chamber, as hereinbefore described, in such quantities as to obtain the best results in the gasification of the fuel. It is, however, essential that air, other than as is admitted with the peat, shall not be supplied through the hopper, as explosion would result therefrom. It is therefore vitally essential that free entry of air through the hopper shall be prevented, and to this end the valve 30 constructed and operated as hereinbefore described is provided.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative, and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim—

1. A gas producing apparatus combined with a fuel feeder and comprising a gas generating chamber arranged for the gasification of fuel therein, means for supporting fuel for gasification by partial combustion in said chamber, means for feeding air for combustion purposes into said chamber, a hopper gradually diminishing in size from its upper to its lower end, and opening at its lower end into said gas generating chamber, a worm located in the said hopper and conforming in shape therewith to closely fit its bore to thereby, in connection with the fuel being fed by the worm, prevent undue inflow of air through the hopper, and means for rotating said worm to force material out of the lower end of said hopper.

2. A gas producing apparatus combined with a fuel feeder and comprising a gas generating chamber arranged for the partial combustion of material therein, means for feeding air for combustion purposes into said chamber, a hopper opening into said gas generating chamber, a worm located in said hopper, a hollow shaft to which said worm is secured, means secured to said shaft to rotate it, a valve stem projecting through said hollow shaft, a valve secured to the lower end of said stem to close the opening from the lower end of the hopper, and means located on said stem to close said valve.

3. A gas producing apparatus comprising a gas generating chamber having means to support fuel for partial combustion therein, means for feeding air for combustion purposes into said chamber, a hopper closing the upper end of said chamber and tapering to a smaller dimension below the upper end of the chamber to provide a heating area for the drying of material within the hopper, said hopper having a free open mouth for the supply of material thereto, a worm located within the hopper to force material from the lower end thereof, a valve to close the lower end of the hopper, said valve being opened by reason of pressure of material within the hopper, and means for closing said valve when the hopper becomes empty.

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