

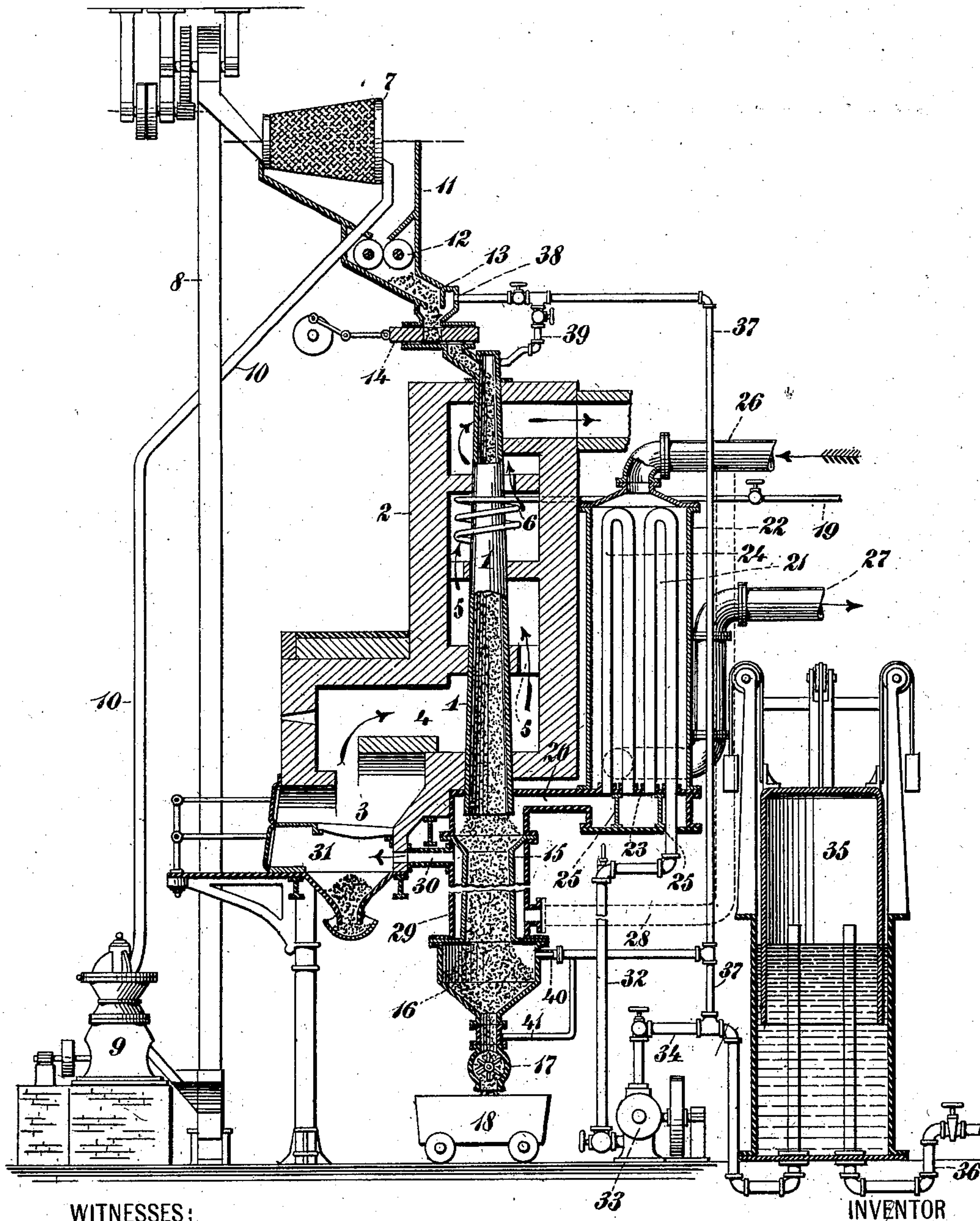
No. 702,580.

Patented June 17, 1902.

T. H. MÜLLER.
APPARATUS FOR PRODUCING GAS.

(Application filed Apr. 2, 1901.)

(No Model.)



WITNESSES:

Gustav Dietrich
John E. Moore

INVENTOR

Teile Henry Müller
BY *Briesen Thum*
ATTORNEYS

UNITED STATES PATENT OFFICE.

TEILE HENRY MÜLLER, OF NEW YORK, N. Y.

APPARATUS FOR PRODUCING GAS.

SPECIFICATION forming part of Letters Patent No. 702,580, dated June 17, 1902.

Application filed April 2, 1901. Serial No. 54,017. (No model.)

To all whom it may concern:

Be it known that I, TEILE HENRY MÜLLER, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Apparatus for Producing Gas, of which the following is a specification.

My invention relates to apparatus for producing gas.

The invention will be described with reference to the production of carbonic-acid gas; but it must be understood that the invention is not confined to carbonic-acid-gas apparatus.

In the accompanying drawing I have shown, by way of example, one form of apparatus embodying my invention.

In the drawing, 1 is a retort, of which there may be a bench. This retort is shown in the present instance as tapering. The retort extends through a furnace 2, provided with any suitable grate 3 and with passages 4 5 6 for the smoke and products of combustion, which pass through the furnace around the retort and pass out through the flue. Located above the retort is a revolving screen 7, which receives crushed rock from a bucket elevator 8, which receives the crushed rock from a rock-crusher 9. A chute 10 returns to the rock-crusher such pieces as are too large to pass through the meshes of the screen. The screen delivers the crushed rock to a hopper 11, preferably provided with crushing-rolls 12, by which the crushed rock is granulated, if desired. The granulated rock passes into a receiving-chamber 13, from which it is delivered by a feeder 14 to the upper end of the retort 1. This retort is closed, and the rock passes through it by gravity and falls into a chamber 15, whence it passes to a hopper 16. A suitable gate device 17 is provided to discharge portions of the charge periodically into a car 18. A pipe 19 leads from a source of steam-supply (not shown) into the furnace and passes in a coil around the retort and is connected to the retort and discharges steam into the retort. By coiling the steam-pipe around the retort within the furnace I cause the steam to be heated before it is admitted to the retort. A passage 20 leads from the chamber 15 to the gas-cooler 21. This cooler is shown as a casing 22, having a partition 23,

in which are set U-shaped pipes 24, which conduct the carbonic-acid gas through the cooler. The partitions 25 are provided in order to cause the gas to pass first through one pipe 24 and then through the other. The gas is cooled in its passage by means of cold air circulating in the casing 22. This cold air is supplied from a blower to the casing by means of a pipe 26 and circulates through the casing, cooling the gas circulating in the pipes 24, and passes out by the pipe 27, which may lead to the boilers or other suitable means for utilizing the air which has been heated in its passage through the cooler. From the pipe 26 a branch pipe 28 leads to a jacket 29 around the chamber 15, and from the jacket a pipe 30 leads into the ash-pit 31 of the grate 3, so that the air after aiding in cooling the spent charge contained in the chamber 15 passes to the fire-bed of the furnace and is in proper condition to efficiently sustain combustion. The cooled carbonic-acid gas passes by a pipe 32 from the cooler to the exhauster 33, whence it passes by a pipe 34 to the gas-holder 35. As carbonic-acid gas is very soluble in water, the liquid employed in the gas-holder may be a heavy oil. From the gas-holder a pipe 36 leads to the compressor for compressing the carbonic-acid gas in the liquefying process. One of the essential features of my invention is the idea of excluding atmospheric air from the generating apparatus for the carbonic-acid gas. In order to exclude atmospheric air, I connect the apparatus with a source of carbonic-acid-gas supply under pressure. This is most efficiently done by providing one or more pipes for conveying carbonic-acid gas to the apparatus under pressure. In the present instance I have shown a pipe 37, leading from the pipe 34. This pipe 37 is connected to the apparatus at various places. In the present instance the pipe 37 is connected by suitable piping to the apparatus as follows: It is connected to the hopper 13 in advance of the feeder or charge-measuring device 14 by the pipe 38. It is connected to the head of the retort by pipe 39, and it is connected to the base of the apparatus by pipes 40 and 41, the pipe 40 entering the discharge-hopper and the pipe 41 being placed in advance of the gate or discharge device 17. By main-

maintaining a pressure of carbonic-acid gas at these points the atmospheric air is excluded, and the resulting product is carbonic-acid gas undefiled by nitrogen or atmospheric air.

It will be understood that I do not attempt to keep the apparatus air-tight, as that would be impracticable for commercial operations; but I achieve the result desired by supplying the carbonic-acid-gas pressure and allowing the same to escape through the joints wherever it will. The reason for excluding the air is found in the fact that carbonic-acid gas containing air or nitrogen is only liquefied with the greatest difficulty, and by producing the carbonic-acid gas free from admixed air and nitrogen the liquefying operation is much facilitated.

I am enabled to maintain the pressure in the retort but slightly above atmospheric pressure by the use of the gaseous pressure supplied to the apparatus by the compressor or exhauster. In this manner the temperature necessary to disengage the gas from the rock is kept relatively moderate, and in combination with the presence of superheated steam the danger of the rock becoming fluxed is avoided.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for producing gas, the combination of a retort, a furnace for heating the same, a steam-pipe connected with the said retort and coiled around the same in the furnace in the path of the combustion-gases, and means for collecting the gas produced.

2. In a gas-generating apparatus, the combination of a retort having a feed end and a discharge end, means for heating the retort, and means for supplying a gas under pressure at each end of the said retort so as to prevent the entry of atmospheric air into the retort.

3. In an apparatus for producing gas, the combination of a retort, means for heating said retort, a feeder for the retort, a gas-pressure device located exteriorly of the retort, and a connection from said pressure device to a point on the opposite side of the feeder from the retort so that the gas under pressure will pass through the feeder with the material on its way to the retort.

4. In an apparatus for producing gas, the combination of a retort, means for heating said retort, a feeder for the retort, a gas-pressure device located exteriorly of the retort, and a double connection from said pressure device to points on opposite sides of the feeder so that a portion of the gas will pass through the feeder with the material and a further portion of the gas will be supplied to the material after its passage through the feeder.

5. In an apparatus for producing gas, the combination of a retort, means for heating the same, a gas-pressure device located exteriorly of the retort, connections from said pressure device to both ends of the retort, and an outlet pipe or conduit leading from the central portion of the retort.

TEILE HENRY MÜLLER.

Witnesses:

EUGENE EBLE,
GEO. E. MORSE.