

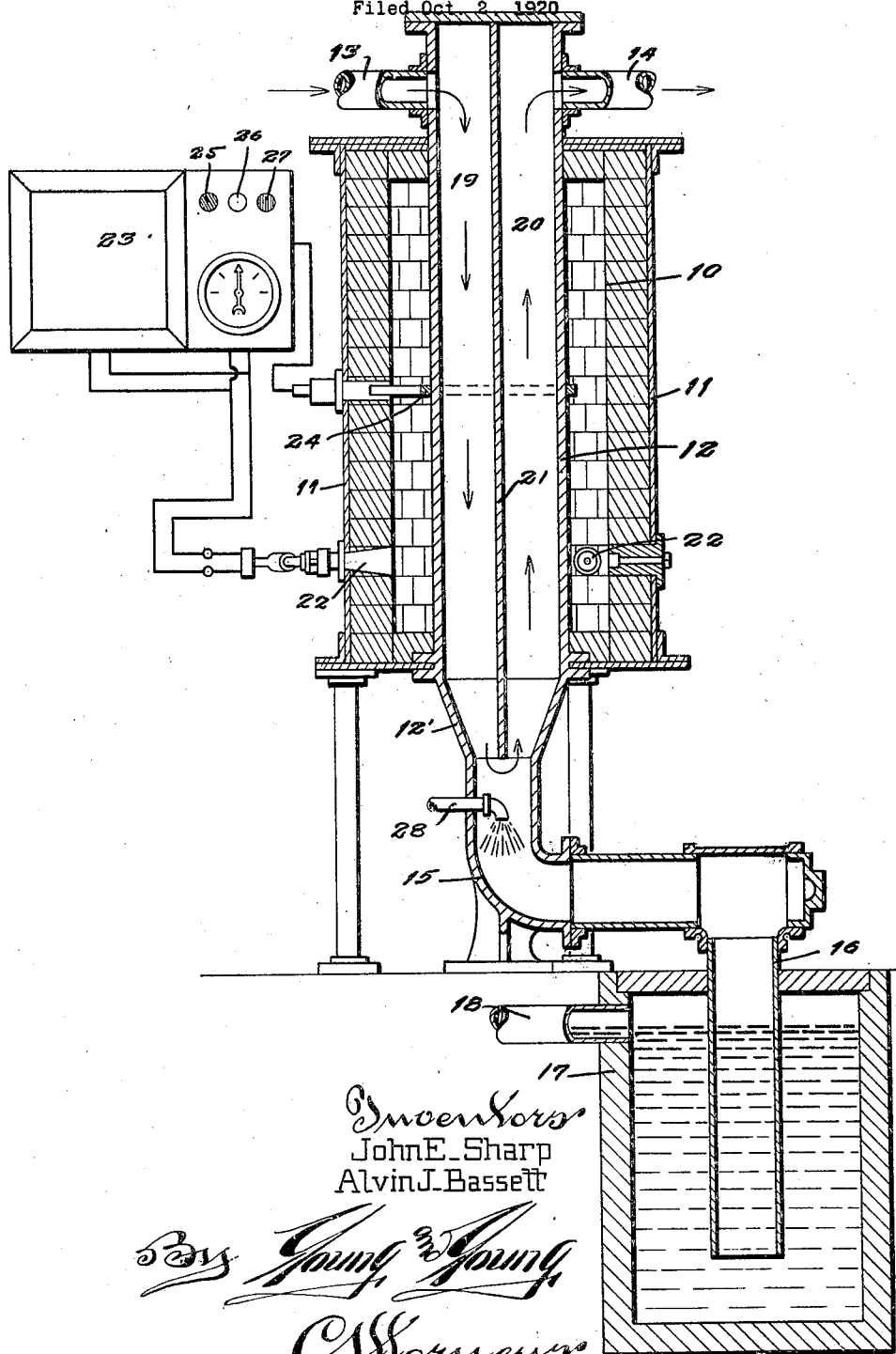
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J. E. SHARP ET AL

RETORT FOR GASIFYING OIL AND TAR

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UNITED STATES PATENT OFFICE.

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RETORT FOR GASIFYING OIL AND TAR.

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To all whom it may concern:

Be it known that we, JOHN E. SHARP and ALVIN J. BASSETT, both citizens of the United States, and residents of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in a Retort for Gasifying Oil and Tar; and we do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to new and useful improvements in a retort for gasifying oil and tar and particularly to a heating device therefor.

In the production of gas from lignite coal, such as is found in large quantities in Texas and other States, also in the production of gas from bituminous coal, wood, and the like, great difficulties have been experienced by the presence of oil and tar, which does not readily become converted into gas. It is the particular object of this invention to provide a novel and improved device, whereby this oil and tar may be easily and completely converted into gas.

Another object is to provide a reheater through which the gas passes from the gas generator and wherein such gas is raised to sufficiently high temperature that the gas containing oil and tar particles, which is delivered thereinto in the form of a vapor or fog, will be instantly converted into gas.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawings.

In the drawings:

The figure is a vertical sectional view of this reheater.

Referring particularly to the accompanying drawing, there is shown a chamber 10 formed from fire-brick, and enclosed in a surrounding metal wall 11. Disposed vertically and centrally within the heating chamber 10, with its upper end closed, is a retort or tube 12, a pipe 13 connecting with one side of the upper end, and leading from the source of raw gas supply (not shown) while a pipe 14 is connected to the other side of the upper end and leads to the scrubbing means (not shown). The lower end of the tube passes through the bottom of the chamber 10, and has the downwardly tapering portion 12', which is connected to an elbow

15, which is in turn connected with a pipe 16, leading into a well 17, sunk in the ground and leading to a sewer by means of the pipe 18. Disposed vertically in the retort or tube 12, and dividing the same into two compartments 19 and 20, is a wall 21. Thus it will be noted that the retort 12 is divided into two compartments one of which, 19, is a gasifying chamber, while the other, 20, is a superheating or fixing chamber, the wall or baffle 21 being positioned between the two. The lower end of the wall or baffle 21 terminates centrally within the lower end of the tapering portion 12' and unattached thereto, the upper end of the said wall being secured to the top wall of the retort, while the side portions of the wall 21 are secured to the opposite sides of the wall of the tube. Extending into the heating chamber 10, from a number of points, are the heating burners 22, receiving their fuel from a suitable source, which is controlled by an indicating and controlling pyrometer 23. A thermo-couple 24 is disposed in the heating chamber 10, approximately midway of the length of the tube 12, and said thermo-couple is connected to the pyrometer. The indicator has a series of differently colored lamps indicating a normal temperature, below normal temperature and above normal, respectively, said lamps being shown at 25, 26, and 27 respectively. If desired an indicating pyrometer can be used and the fuel to the burners regulated by hand or other means. The retort may be arranged for gasifying any kind of oil, oily and tarry vapors, or gas containing particles of oil and tar and may be arranged with elements for using electric current.

In the lower portion of the tube, externally of the heating chamber 10, is a spray nozzle 28, which delivers its spray down the curve of the L 15 and into the pipe 16, washing the sediment into the sump 17.

In the operation of the device, the gas containing oil and tar particles is received in the upper end of the retort or tube 12 at one side of the wall 21, passes downwardly therewithin, and around the lower end of said wall, and thence upwardly at the other side thereof, from which it escapes to the scrubber through the pipe 14. As the gas containing oil and tar particles passes first downwardly throughout the entire length

of the tube 12, its temperature is raised to a high degree, and thence upwardly again through chamber 20 where the vapors or gases are superheated or fixed throughout the entire length of the tube, the heat from the tube quickly gasifying the vapor or fog formed of the oil and tar present in the lignite coal and carried over in the gas, the spray from the nozzle 28 serving to precipitate the sediment and heavier matter in the gas, to the well 17.

With a lignite coal gas plant, in which this retort is installed, fuel which otherwise would be waste, can be readily used and converted into commercial gas.

Our invention is susceptible of embodiment in a variety of mechanical structures, but it is to be understood that regardless of the design and construction, the principle and process of gasifying oil and tar vapor or fog which is carried over with the gas generated from a variety of fuels, is our basic claim.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is:—

A retort for gasifying oil and tar comprising a heating chamber, a vertical gas retort disposed centrally within the chamber and having an elbow at its lower end, said retort having a vertical division wall centrally therewithin, said wall being connected to the top wall of the retort and terminating in spaced relation to the lower portion thereof and centrally in unattached relation thereto, a temperature regulator, regulatable burners within the heating chamber, and a spray nozzle in said elbow and adapted to wash the sediment collected therein to a suitable well.

In testimony that we claim the foregoing we have hereunto set our hands at Milwaukee in the county of Milwaukee and State of Wisconsin.

JOHN E. SHARP.
ALVIN J. BASSETT.