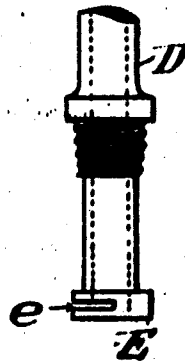
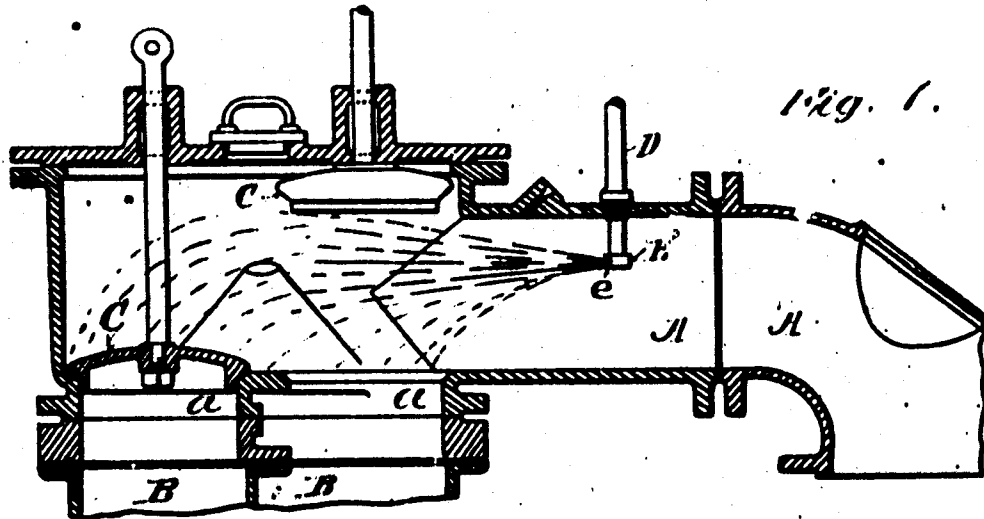


W. H. ALLEN, Jr.
 CONSTRUCTION OF GAS DISCHARGING DEVICES FOR RETORT COKE OVENS.
 APPLICATION FILED MAR 17, 1909.

947,522.

Patented Jan. 25, 1910



Witnesses:
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UNITED STATES PATENT OFFICE.

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CONSTRUCTION OF GAS-DISCHARGING DEVICES FOR RETORT COKE OVENS.

947,522.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed March 17, 1909. Serial No. 483,983.

To all whom it may concern:

Be it known that I, WILLIAM H. ALLEN, JR., a citizen of the United States, residing at Grosse Ile, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Construction of Gas-Discharging Devices for Retort Coke-Ovens, of which the following is a specification.

10 In the operation of such devices, where valves are employed to control the outlets from the local discharge pipes into the main gas discharge pipe, or pipes, a difficulty is experienced through the deposition of tar on the valves whereby their operation is rendered difficult, or impossible. A further difficulty is experienced through the distillation of the tar deposited in the main pipes, by the continued action thereon of the high temperature of the outgoing gas, whereby the tar is converted into a sticky pitch, extremely difficult of removal from the pipes, a condition which has heretofore been the source of much inconvenience and expense in the operation of such devices.

I have found that if a liquid, as water, in such condition that it will be vaporized by the heat of the gas, and in the vaporization of which a considerable number of heat units is absorbed, be discharged into the main gas pipe, the temperature of the gas may be so far reduced without any objectionable results, that the above stated effects of the heat upon the tar will be prevented, and at the same time the deposit of tar on the valves may be prevented or removed by the mechanical action of such liquid thereon.

To this end then my invention consists broadly in discharging such a liquid upon the valves which control the outlets from the local gas discharge pipes and into the main gas discharge pipe in a finely divided condition, as in the form of a spray so as to cause its vaporization therein, and in the combination with such pipes of means for effecting such discharge.

An embodiment of the mechanical features of my invention is illustrated in the accompanying drawings, Figure 1 of which shows a vertical longitudinal section thereof, and Fig. 2 an enlarged view of the liquid discharge pipe.

Referring to the drawing, A indicates a local gas discharge pipe leading from a retort coke oven (not shown). The pipe, A,

is arranged to discharge into one or the other half of the two part main gas pipe B, B, through ports *a, a*, controlled by valves C, C. Set in through the shell of the pipe A is a liquid discharge pipe, D, arranged to communicate with a source of liquid supply (not shown). The lower end of the pipe D is closed by a cap E, provided with a slotted opening, *c*, so disposed that liquid entering under pressure through the pipe D will be thrown in the form of a spray upon the seats of the valves, C, C, and, through whichever port may be open, into the pipe below.

The operation of the device is as follows: When gas is being discharged through the pipe A into either part of the pipe B, B, a liquid, such as water, in a finely divided condition readily volatilizable under the temperature conditions present, and which in its volatilization will absorb a considerable number of heat units, is discharged in the form of a spray under pressure from the opening, *c*, of the pipe D, and falls upon the valves C, C, and the valve seats, and, through whichever valve may be open, into the pipe below.

The temperature of the gas coming from the retort will range at about 500° C., under which condition the finely divided particles of water are quickly converted into steam. As is well known, 966 heat units are absorbed by each pound of water converted into steam. Evidently the flow of water may be adjusted as desired and, by the continuous abstraction from the gas of the required number of heat units, it may be kept at such a temperature that the deposited tar will remain in a state in which it can be readily removed from the pipes. At the same time the tar deposited on the valve seats is kept soft and is washed away by the mechanical action of the water spray falling thereon, so that the difficulty in operating the valves, due to the presence of tar on the valve seats, is obviated.

While I prefer to use water as the liquid for carrying my invention into effect, it is evident that any other liquid, not objectionable for chemical reasons, and in the volatilization of which a considerable number of heat units is absorbed, may be employed. The steam formed will be carried along with the gas and may be subsequently condensed in condensers or in any suitable or desired part of the apparatus.

What I claim as new and desire to secure by Letters Patent is:

1. The combination with a discharge pipe for hot gas, provided with a controlling valve, of a liquid spraying device, located adjacent to and discharging upon said valve, for delivering a liquid in a finely divided condition into the hot gas and upon the valve seat.
2. The combination with a discharge pipe for hot gas, provided with a valve seat, and a controlling valve for engaging said seat, of a spraying nozzle projecting into said pipe, adjacent to said valve seat, said nozzle being provided with a lateral spraying aperture, on the side adjacent to the valve seat, and a liquid supply pipe connected with said nozzle.

In testimony whereof, I have hereunto subscribed my name, this 12th day of March A. D., 1900.

WM. HENRY ALLEN, JR.

Witnesses:

P. B. KORBEL,
R. E. HANLON.