G. M. S. TAIT.

GAS SCRUBBER.

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998,930. Patented July 25, 1911.

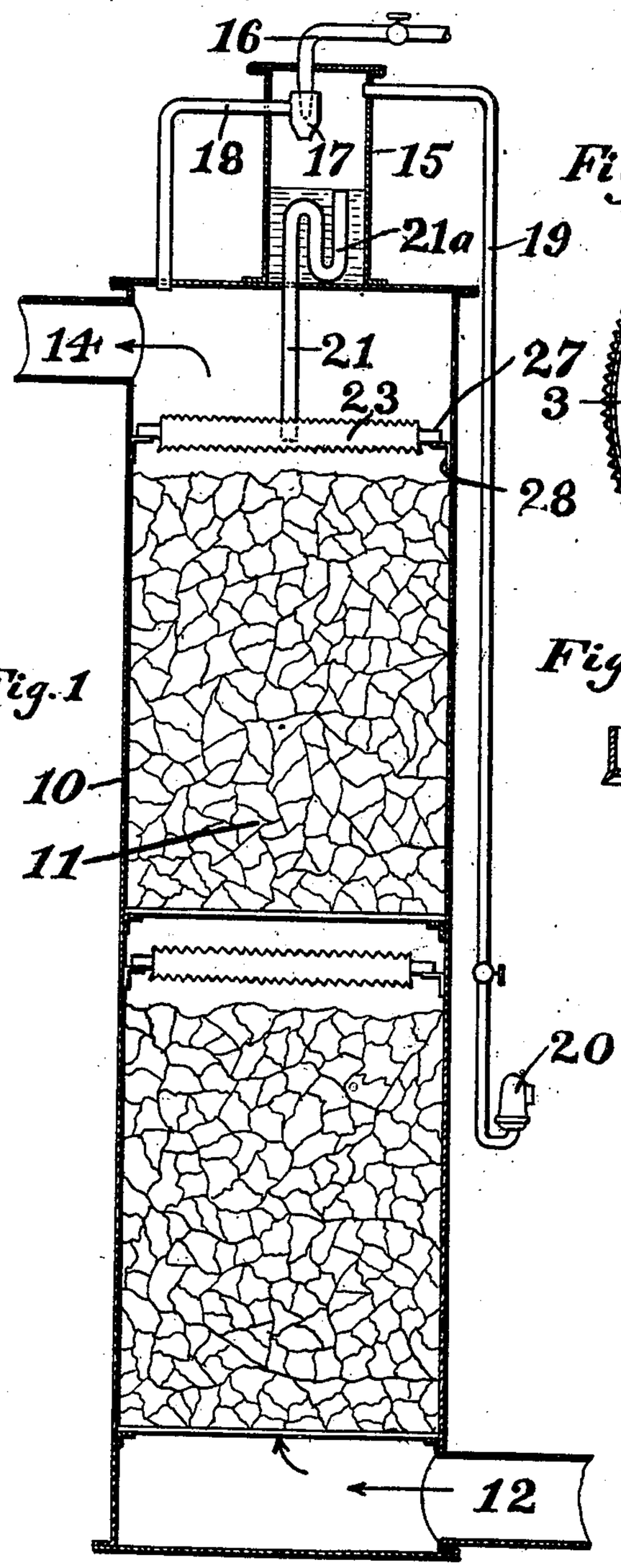

Fig. 1

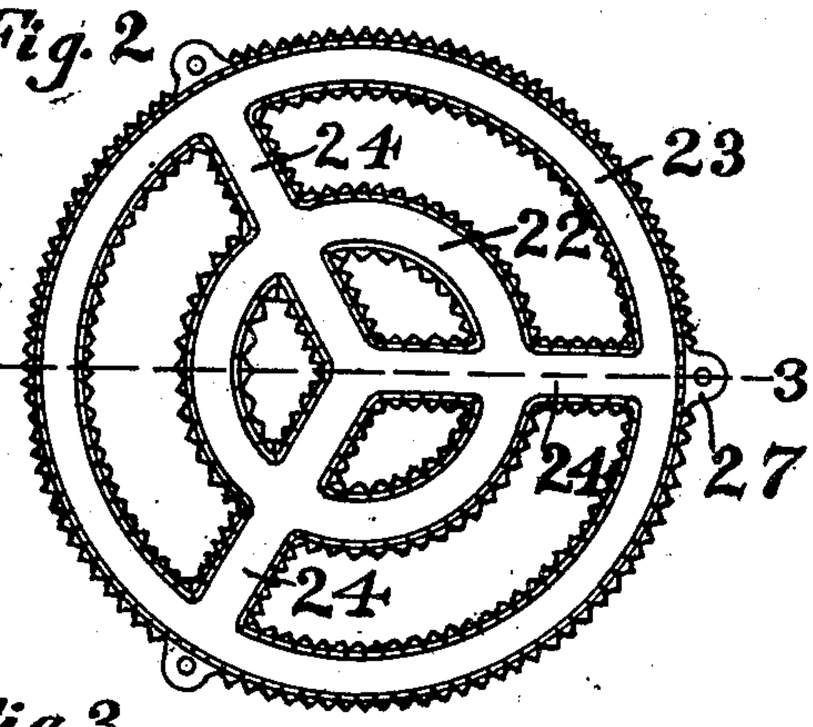

Fig. 2

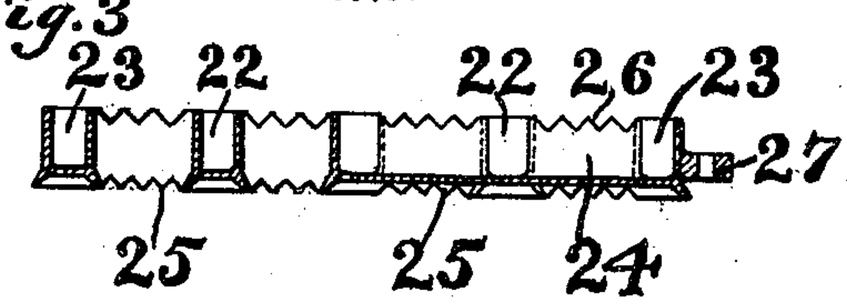

Fig. 3

WITNESSES:

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GAS-SCRUBBER.

998,930. Specification of Letters Patent. **Patented July 25, 1911.**

Application filed December 30, 1909. Serial No. 535,598.

To all whom it may concern:

Be it known that I, GODFREY M. S. TAIT, of Montclair, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Gas-Scrubbers, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a scrubber for producer gas, adapted to have the gas pass through it from the producer, whereby the tar and other impurities are removed.

The invention is particularly applicable to the suction type of gas producer plants, though it is by no means limited to that application.

The objects of my invention are to economize in the use of water and at the same time to supply the gas with a sufficient quantity of water to wash out all of the impurities and utilize the water as a means for withdrawing a small quantity of gas from the scrubber or other point in the gas line, which gas may be employed for testing and for the purpose of a pilot flame indicating to the operator the condition of the gas.

In carrying out my invention in accordance with the aforegoing I employ an injector operated by the water supply under pressure, which injector serves to withdraw a small quantity of gas from the scrubber and pass it under slight pressure to any desired point. From the chamber in which the gas and water are thus introduced I discharge the water by force of gravity through a sealed passage to a distributer in the body of the scrubber which collects the water and allows the same to flow slowly and by gravity over the entire area of the scrubber. In this manner by the consumption of but a small quantity of water I perform the twofold functions pointed out.

My invention involves various other features of importance, all of which will be set forth hereinafter and particularly pointed out in the claims.

The accompanying drawings illustrate, as an example, the preferred embodiment of my invention.

In these drawings Figure 1 is a vertical section of the scrubber constructed in accordance with my invention; Fig. 2 is a plan view of the distributer; and Fig. 3 is a section thereof on the line 3—3 of Fig. 2.

Referring to said drawings and to the reference characters marked thereon, 10 indicates the exterior shell of the scrubber which is filled with coke or other refractory material as will be understood from the prior art. In the type of invention here shown, the gas enters at the bottom through a pipe 12 and is drawn off at the top through a pipe 14 by the suction of an Otto cycle gas engine or other means.

Preferably at the top of the shell 10 is a chamber 15 into which a supply pipe 16 leads the water from its source. The supply pipe communicates with the nozzle of an injector 17 located within the upper portion of the chamber 15. Said injector may be of any desired form and its suction chamber communicates with a pipe 18 from the gas line or main gas passage through the system and drawing gas therefrom, discharges it into the chamber 15, under sufficient pressure to force the gas to the point of consumption, for example, through a pipe 19 leading from the chamber 15 to a pilot flame burner 20. The water accumulates in the bottom of the chamber 15 and passes out thereof through a discharge pipe 21, which includes a trap 21^a, preventing the return of gas from the chamber 15 to the scrubber. This pipe 21 discharges the water centrally upon the distributer of which there may be one or more in the scrubber. Fig. 1 illustrates two distributers.

The distributer is formed of concentric circular troughs of which there are preferably two, indicated at 22 and 23 in the drawings. These circular troughs are connected by radial troughs 24 of which the drawing shows three, the radial troughs not only forming a mechanical connection between the circular troughs, but all of the troughs communicate with each other so that the water may flow equally through them and overflow from their upper edges. For the purpose of distributing the water from the troughs in fine streams, the troughs are provided at their bottoms with outwardly projecting flanges 25, which are toothed or serrated as shown and which cause the water to trickle from the distributer in slender streams. If desired, the upper edges of the various troughs may be formed with similar teeth or serrations 26 which aid in this operation. The distributer is fastened horizontally in the scrubber, for example, by

means of ears 27 supported on brackets 28 (see Fig. 1). The discharge pipe 21 from the chamber 15 supplies the water to the distributer at about the center thereof and the water flows uniformly throughout the troughs of the distributer.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is

1. A gas scrubber having a shell or body having a gas inlet and a gas outlet, a chamber above the same, an injector in said chamber, a water supply pipe communicating with the injector, a pipe communication between the injector and the interior of the scrubber, whereby gas is withdrawn from the scrubber to said chamber, a gas outlet from the chamber, a water sealed water outlet from the chamber to the interior of the scrubber and a distributer in the scrubber to which the said outlet leads.

2. The combination with a gas scrubber having a gas inlet and a gas outlet, of a water supply thereto, an injector through which the water passes and a communication means between the injector and the gas line, whereby the water flow is utilized to withdraw a quantity of gas from the gas line.

3. The combination with a gas scrubber having a gas inlet and a gas outlet, of a water supply thereto, and means operated by the said water supply to withdraw a quantity of gas from the gas line, for the purpose specified.

4. The combination with a gas scrubber having a gas inlet and a gas outlet, of a water supply means therefor, an injector through which the water passes, a chamber inclosing the injector, a communication means between the injector and the gas line and a water sealed water outlet from the chamber to the scrubber.

5. A gas scrubber having a shell or body having a gas inlet and a gas outlet, a chamber above the same, an injector in said chamber, a water supply pipe communicating with the injector, a pipe communication between the injector and the interior of the scrubber, whereby gas is withdrawn from the scrubber to said chamber, a gas outlet from the chamber and a water sealed water outlet from the chamber to the interior of the scrubber.

6. A gas scrubber having a shell or body having a gas inlet and a gas outlet, a chamber separate therefrom, an injector in said chamber, a water supply pipe communicating with the injector, a pipe communication between the interior of the scrubber and the injector, whereby gas is withdrawn from the scrubber, a gas outlet from the chamber and a water sealed water outlet from the chamber.

7. In combination a shell or body through which gas is caused to pass, means for subjecting the gas to the influence of a liquid, a chamber, an injector in said chamber, a liquid supply communicating with the injector, a pipe communication between the injector and the interior of said shell or body, whereby gas is withdrawn from the shell or body to said chamber and a gas outlet from said chamber.

8. In combination a shell or body through which gas is caused to pass, means for subjecting the gas to the influence of a liquid, a chamber, an injector in said chamber, a liquid supply communicating with the injector, a pipe communication between said shell or body and the injector, whereby gas is withdrawn from the shell or body to said chamber, a gas outlet from said chamber and a liquid sealed liquid outlet from said chamber to said first-mentioned means.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GODFREY M. S. TAIT.

Witnesses:
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