Aug. 26, 1952 J. F. ALCOCK 2,608,399

SUBMERGED BLAST GAS SCRUBBER

Filed April 24, 1950

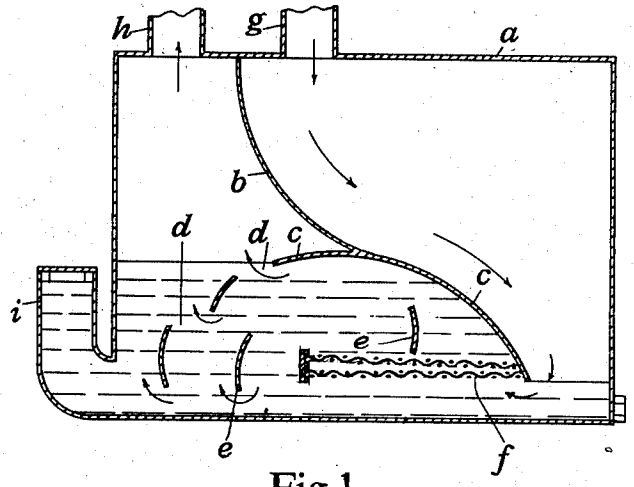


Fig.1

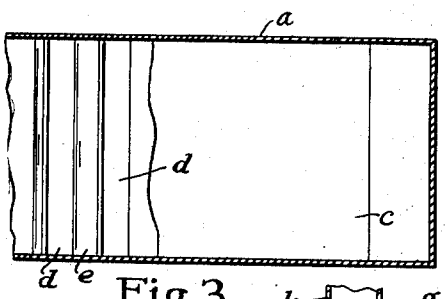


Fig.3

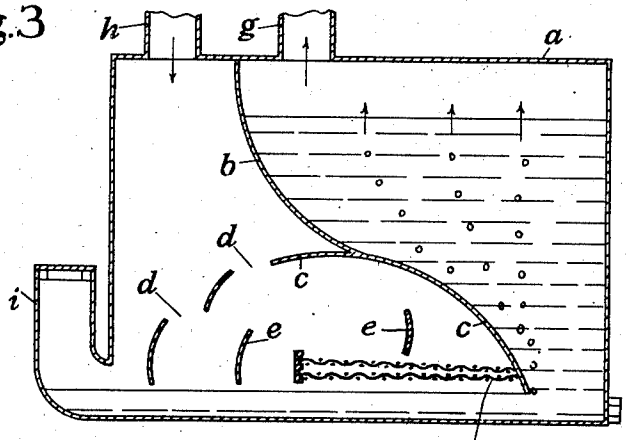


Fig.2

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SUBMERGED BLAST GAS SCRUBBER

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2 Claims. (Cl. 261—122)

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This invention has for its object to provide an improved gas scrubber, and particularly a scrubber for the exhaust gases of internal combustion engines.

In the accompanying diagrams:

Figures 1 and 2 illustrate (in two different working conditions) a scrubber embodying the invention, and Figure 3 is a fragmentary sectional plan of the scrubber.

Referring to the diagrams, a chamber *a* adapted to contain an adequate volume of water in its lower part, is divided into two compartments by a partition *b*. Also it has arranged in its lower part a baffle *c* of inverted semi-cylindrical or hemi-spherical or other equivalent form, and in one side of the baffle are provided gas-outlet orifices *d*. Also one or more guide vanes *e* may be provided within the baffle to promote the desired swirling action. Further there is arranged horizontally across the part of the region enclosed by the baffle a grid *f* which may be made from a suitably fine mesh of expanded metal, this grid being arranged to extend from one of the lower edges of the baffle across about one half, or rather more than one half, of the region subtended by the baffle. One of the chambers is provided with a gas inlet *g* and the other with a gas outlet *h*. Also a closed branch connection *i* is provided through which water can be introduced.

The arrangement is such that gases admitted through *g* and caused to pass beneath the grid *f* at the edge attached to the baffle *c* first flow upwardly through the grid, and by impinging against the concave underside of the baffle set up a swirling, or eddy-like motion, in the water, causing the water with its entrained gases to be circulated repeatedly through the grid and within the baffle, before the scrubbed gases escape through the orifices *d* in the baffle to an outlet *h*. In this condition the pressure of the gas in the right hand compartment depresses the level of water in that compartment and correspondingly raises the level in the other compartment as shown in Figure 1. Moreover the capacity of the entrance compartment is such that it can accommodate all the water in the chamber, so that in the event of accidental reversal flow of the gases, consequent upon, for example, reversal of the action of an engine, whose exhaust gases are passed through the scrubber, causing air from the engine to pass into the discharge compartment, the water will be displaced from that compartment into the other as shown in Figure 2. When the level of the water in the discharge compartment reaches the lower edge of the baffle, the air can escape through the water in the other compartment without escape of the water from that compartment. With resumption of the normal action of the engine

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the water returns to the gas discharge compartment.

The invention is primarily intended for use on diesel-engine locomotives intended to operate in confined regions where it is essential to obviate pollution of the atmosphere by the exhaust gases, though it may be applied to other uses, particularly where thorough scrubbing of toxic or otherwise injurious gases is necessary.

By the invention a rapid circulatory motion is set up in the water by the gases, causing the latter to be thoroughly cleansed before final discharge.

The invention is not, however, restricted to the example described, as details of construction may be varied to suit different requirements. Also whilst the invention is particularly intended for dealing with engine exhaust gases, it may be applied to other uses.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A gas scrubber comprising in combination a chamber adapted to contain water, a partition dividing the chamber into two compartments which intercommunicate at the lower end of the chamber, a gas inlet at the upper end of one of the compartments, a gas outlet at the upper end of the other compartment, an apertured and upwardly curved baffle situated in the lower part of the chamber and extending from the lower part of the partition across the two compartments, and a grid extending from a lower edge portion of the baffle across a part of the region subtended by the baffle, whereby gases passing from the inlet compartment under the lower edge of the baffle, flow upwardly through the grid, and by impinging on the concave underside of the baffle set up a swirling, or eddy-like motion, in the water, causing the latter and the gases entrained thereby to be circulated repeatedly through the grid.

2. A gas scrubber as claimed in claim 1, in which the capacity of the inlet compartment is sufficient to accommodate all the water in the chamber, and thus prevent discharge of the water in the event of accidental reverse flow of the gases.

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