T. E. MURRAY & E. B. RICKETTS.

METHOD OF NEUTRALIZING CORROSIVE FUMES IN GASES.

APPLICATION FILED OCT. 14, 1914.

1,132,679.

Patented Mar. 23, 1915.

2 SHEETS—SHEET 1.

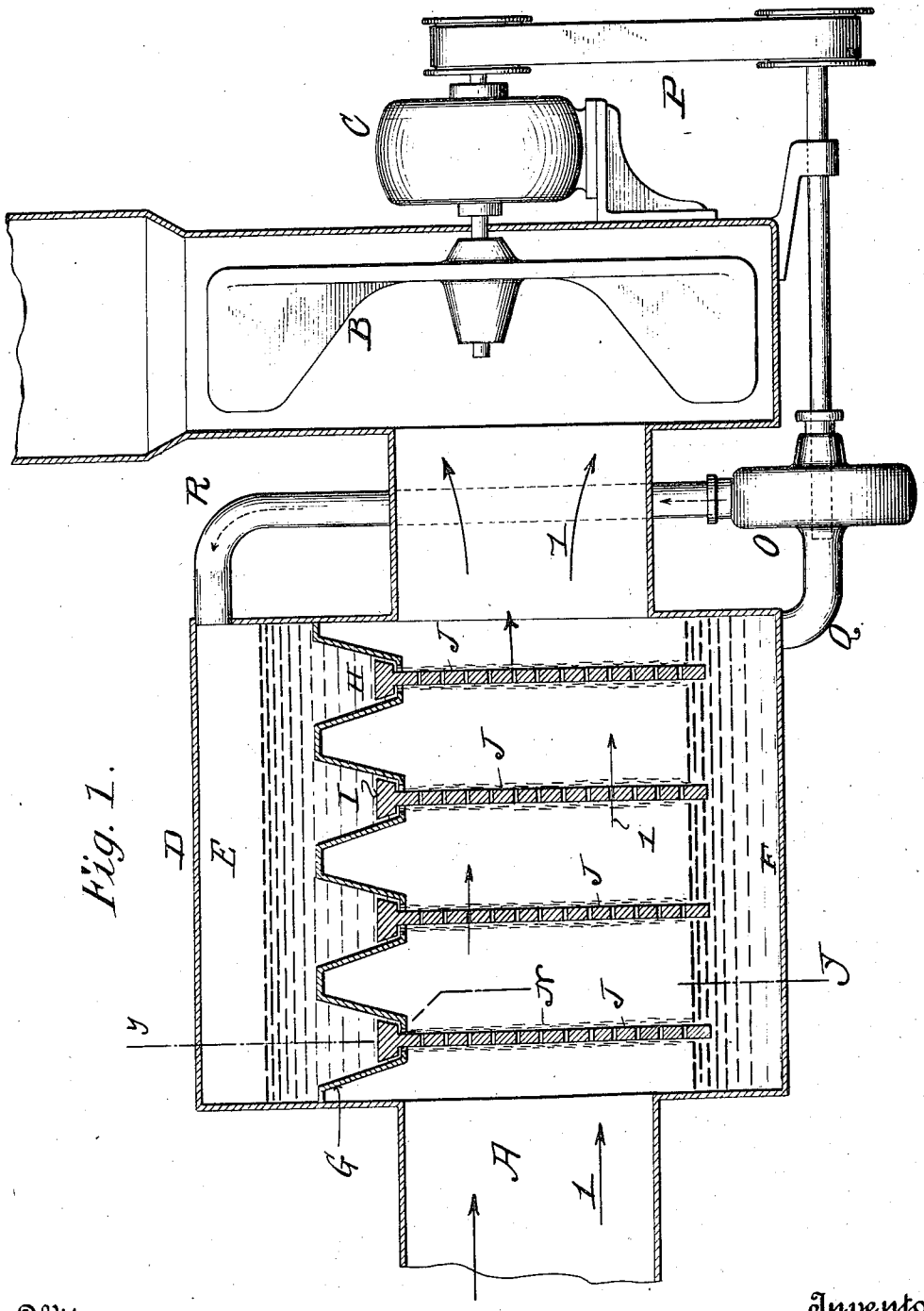


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2

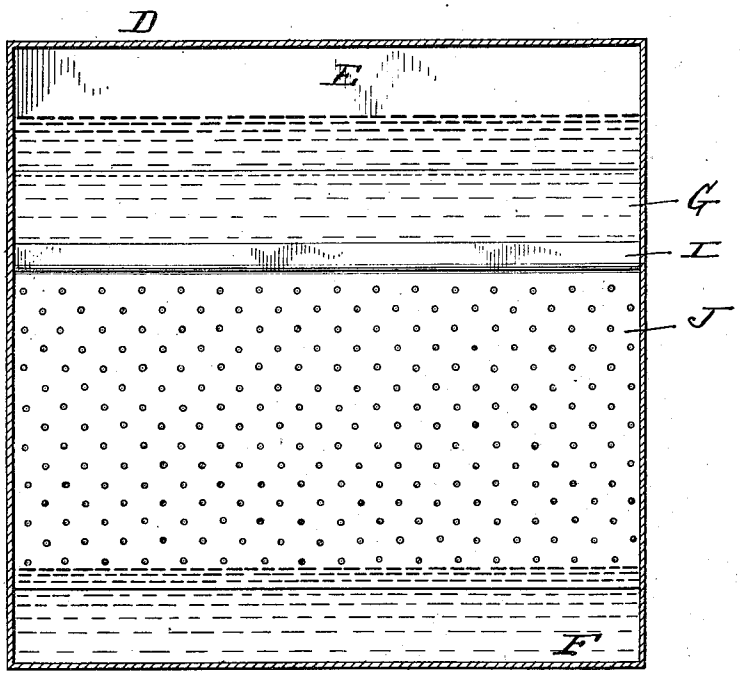
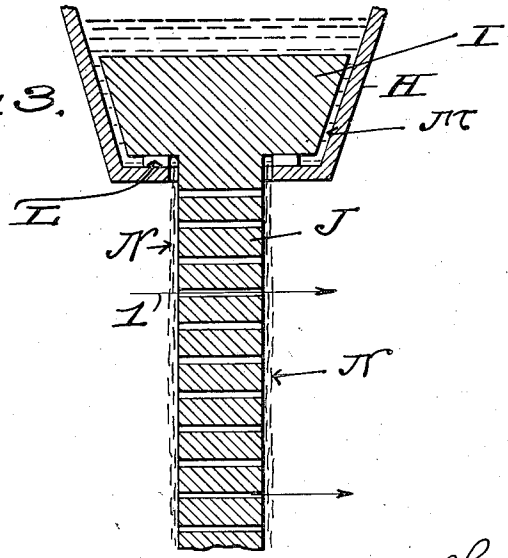


Fig. 3.



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UNITED STATES PATENT OFFICE.

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METHOD OF NEUTRALIZING CORROSIVE FUMES IN GASES.

1,132,679. Specification of Letters Patent. Patented Mar. 23, 1915.

Application filed October 14, 1914. Serial No. 866,666.

To all whom it may concern:

Be it known that we, THOMAS E. MURRAY and EDWIN B. RICKETTS, citizens of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Methods of Neutralizing Corrosive Fumes in Gases, of which the following is a specification.

Our invention is a process of neutralizing corrosive gas contained in a current of inert gas, and includes an apparatus whereby said process may be carried into practical effect.

Our invention is more especially intended to neutralize the fumes of sulfuric acid which arise from storage batteries while being charged, which fumes are destructive to clothing and many other objects, and also injurious to health.

Our process consists broadly in causing the current containing the corrosive gas to pass in the form of fine jets through a sheet, or sheets, of liquid solution containing an ingredient capable of chemically combining with said gases to produce an inert or non-corrosive substance which is taken up by said solution; so that the current is delivered substantially free from said gas.

In the accompanying drawings—Figure 1 is a vertical longitudinal section of our apparatus. Fig. 2 is a transverse section on the line *y*, *y* of Fig. 1. Fig. 3 is an enlarged vertical section of a portion of one of the perforated plates.

Similar letters of reference indicate like parts.

A is a duct leading from the battery room or other place in which corrosive fumes, such as those of sulfuric acid, are generated. Said fumes mingled with the air of the room are drawn from said room and delivered to the chimney or other outlet by means of an exhaust fan B, here shown as driven by an electric motor C. In the duct A is disposed a box D, divided horizontally into two compartments E, F by a partition G, formed in a series of parallel troughs H. In the bottom of each trough is a slot to receive the upper shouldered portion I of a vertical plate J. The said shouldered portion I is supported in any suitable way, as by blocks L, Fig. 3, above the trough bottom, and there is clearance between the sides of said portion and said trough walls, as shown at M, so that liquid in the trough may run down both surfaces of said plate in substantially thin sheets N. The plates J have many fine perforations. At their vertical edges, they are in contact with the side walls of compartment F.

O is a rotary pump, the shaft of which is driven by belt P from motor C. The inlet pipe Q of said pump is connected to the bottom of compartment F, and the outlet pipe R to the top of compartment E.

In compartment F we place a solution of soda ash, preferably in the proportion of one pound of soda ash to each gallon of water. This solution, by means of pump O, is drawn from compartment F and delivered into compartment E, whence it flows down the surfaces of the vertical perforated plates J, as already described, in the form of thin liquid sheets N.

The current of air containing the acid fumes to be eliminated is drawn by the exhaust fan B through said liquid sheets, and through the perforations in plates J, as indicated by the arrows 1. The soda solution because drawn through the perforations becomes broken up into a fine spray and is thoroughly mixed with the air and acid fumes, neutralizing the sulfuric acid and producing sodium sulfate which enters into the solution. The chemical reaction here taking place is as follows:

$$Na_2CO_3+H_2SO_4=Na_2SO_4+H_2O+CO_2.$$

By means of pump O, a continuous circulation of the soda ash solution is kept up over the surfaces of plates J. When said solution becomes overcharged with sodium sulfate, it is drawn off and fresh solution substituted.

Any number of plates J may be used. While we have here shown them as of considerable thickness, we may make them, if desired, of any suitable foraminous material, such as wire-netting or gauze, or perforated thin metal.

We claim:

1. The process of neutralizing corrosive gas contained in a current of inert gas, which consists in causing said current to pass first through a thin sheet of solution containing an ingredient capable of chemically combining with said corrosive gas to neutralize the same, and then with the liquid entrained by said passage to pass in the form of fine jets through the interstices of a foraminous screen.

2. The process of neutralizing sulfuric

acid fumes contained in an air-current, which consists in first causing said current to pass through a thin sheet of soda ash solution, and then with the liquid entrained by said passage to pass in the form of fine jets through the interstices of a foraminous screen.

3. The process of neutralizing sulfuric acid fumes contained in an air-current, which consists in first causing said current to pass through a thin sheet of soda ash solution, and then with the liquid entrained by said passage to pass in the form of fine jets through the interstices of a foraminous plate, over which plate said sheet is kept flowing.

4. The process of neutralizing sulfuric acid fumes contained in an air current, which consists in first causing said current to pass through a thin sheet of soda ash solution, and then with the liquid entrained by said passage to pass in the form of fine jets through the interstices of a foraminous plate, and then to traverse a second thin sheet of soda ash solution, the said liquid sheets being kept flowing on opposite sides of said plate.

5. The process of neutralizing corrosive gas contained in a current of inert gas, which consists in causing said current to traverse a solution containing an ingredient capable of chemically combining with said corrosive gas to produce in said solution a non-corrosive substance.

In testimony whereof we have affixed our signatures in presence of two witnesses.

THOMAS E. MURRAY.
EDWIN B. RICKETTS.

Witnesses:
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