

nite information may be gained upon this interesting subject, although serious difficulties would be encountered in attempting to reach an altitude so high as to render the results of chemical tests positively conclusive.

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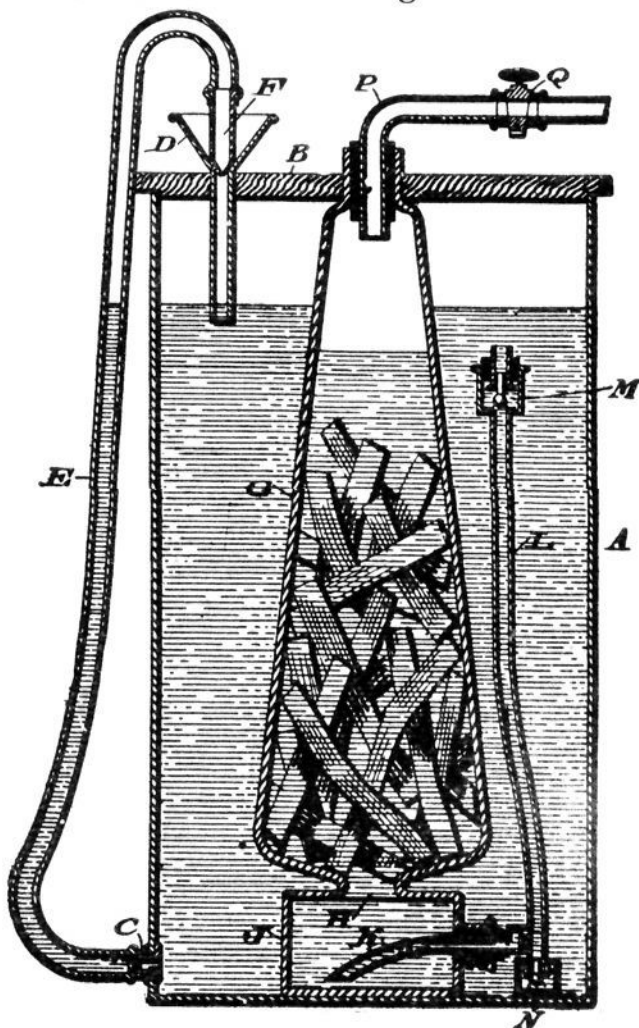
A NEW GENERATOR.

BY EDWARD P. HARRIS.
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A GREAT many forms of automatic generators for the preparation of such gases as hydrogen, hydrogen sulphide, carbon dioxide, etc., have been proposed, that known as the "Kipp apparatus" being probably most widely used.

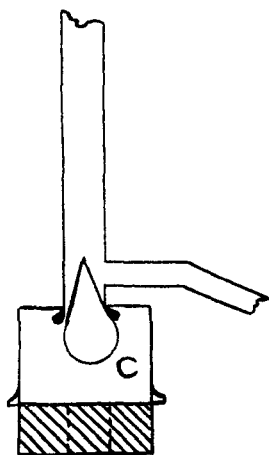
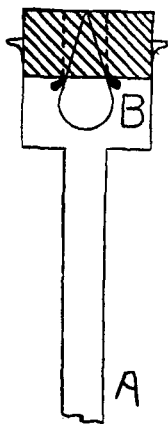
The chief objection to this and other forms in general use lies in the fact that according to their construction the spent acid at the bottom of the reservoir, containing the metallic salts, is used over and over again until it becomes too weak for further action, while plenty of fresh acid remains in the upper part of the reservoir, unable to enter the inner chamber containing the solid material (zinc, iron sulphide, marble, etc.)

The accompanying figures show how this difficulty is removed by a very simple device. The second figure shows the side



tube A enlarged. By mistake the artist has placed the side tube on the wrong side.

The bottom of the inner cylinder is closed and the flow of acid must be through the side tube A. This tube is connected with the lower part of the inner cylinder and is entirely immersed in the acid of the reservoir. At each end is a floating glass valve playing upon a rubber cushion at the end of the tube. When the gas is turned on and the pressure relieved from the inner cylinder the acid can enter only at B, and when the action is reversed the acid can escape only at C.



Thus, fresh acid from the upper part of the reservoir is always used and the spent acid containing the metallic salts is always deposited at the bottom where it remains, owing to its greater specific gravity. Once set up and charged the only attention this generator needs is the occasional withdrawal of some of the spent acid from the bottom and the addition of an equal quantity of fresh acid through the funnel at the top.

A generator of this description two and a half feet in height has furnished hydrogen sulphide for a class of thirty students in qualitative analysis for eight months, the only attention required being to fill the reservoir three times with acid. The apparatus may be obtained from Queen & Co. in three sizes. The largest size is particularly recommended for generating hydrogen sulphide.