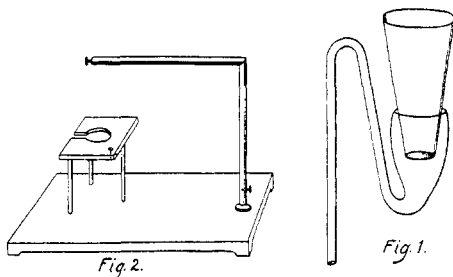


THE USE OF THE GOOCH CRUCIBLE AS A SILVER VOLTAMETER.

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For the exact measurement of electric currents, no method is more convenient and more free from objections than the determination of the amount of silver deposited from a neutral solution of a silver salt. The sole source of error, especially where weak currents are concerned, arises from the imperfect adhesion of the silver upon the cathode. The latter is generally a platinum crucible, and the silver, except for densities of current not always attainable, is deposited in minute scales and needles, instead of forming a coherent coating. In the subsequent washing and decantations, these particles are readily detached and carried away, and a loss is occasioned which becomes very appreciable when the total deposit does not exceed a few centigrams. A Gooch crucible, with asbestos felting over the holes, would be a far better form of cathode, if it would only hold the solution during electrolysis without leaking. I have attained this very satisfactorily, by replacing the ordinary platinum cap with a glass siphon of the shape indicated in Fig. 1.



The crucible is made on a rather taller and narrower pattern than is usual, and it fits quite snugly into the upper portion of the cup

of the siphon. The two are united by a bit of rubber drawn over the junction; the rubber should be freed from sulphur, although there is no real danger of contact with the silver solution.

The apparatus is filled with the silver nitrate solution, so that the top of the siphon is not quite reached and is set upon the stand, Fig. 2. After the completion of the electrolysis, adding a little liquid causes the siphon to act and to drain off every drop of nitrate solution, without in any way disturbing the deposit; the lixiviation with hot water is equally expeditious, and the crucible can then be detached from the siphon, dried and weighed.

The stand for this voltameter is seen in fig. 2. The crucible is hung in a brass block, the conical hole in which fits exactly around its upper third; to this block the negative wire of the circuit is to be attached.

The positive wire is connected with long horizontal cone, which is isolated from the cast-iron base, and from which the silver cone that forms the anode is suspended within the crucible by a silver wire.