SCIENTIFIC APPARATUS AND LABORATORY METHODS

A GLASS ASSEMBLY FOR SEITZ BACTERIOLOGICAL FILTERS

BACTERIOLOGICAL filters are so made that the filtered liquid comes in contact with metal surfaces which usually contain copper or some other heavy metal. On one occasion a drop of water suspended from the stem of a well-washed and freshly sterilized Berkefeld filter contained enough copper to have a distinct blue color and give a flame test for copper. In view of the known static action of very small amounts of heavy metals for bacteria, even in protein media, it seems possible that contamination by copper or other metals may sometimes be sufficient to cause erratic variation in the growth of bacteria in synthetic media.[1] Such

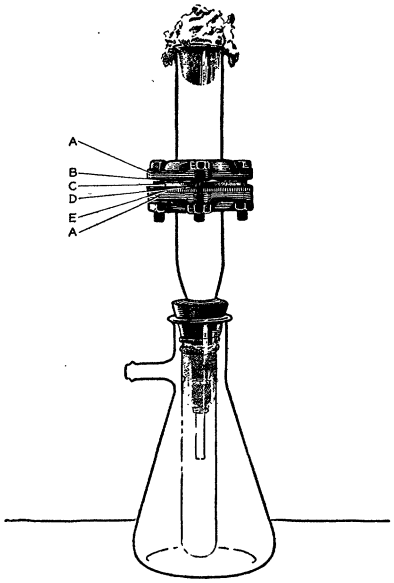

FIG. 1. A. Iron flanges. B. Filter paper. C. Seitz filter disc. D. Aluminum or platinum support. E. Asbestos interface gasket.

variation was in fact observed in this type of medium when the usual filters were used in sterilization, but not when a glass filter assembly was used.

In order to escape such an obvious possibility of contamination by heavy metals, a modified Seitz filter has been devised in which the liquid comes in contact with no metal surfaces other than aluminum or platinum. In addition to being easily constructed and allowing full vision of the material being filtered, this device has the advantage of being much less expensive than the usual filter of this type.

The heavy pyrex glass piping which has recently become available in a variety of sizes can be used to construct such a filter. For the filtration of 50 ml or less, two straight 4 in. lengths of 1 in. flanged piping with the metal flanges, bolts and asbestos interface gaskets to fit may be used. One of the straight lengths is cut in two, and to each half is sealed an appropriate funnel tube. If suction alone is required, only one of these need be used. The flanges and gaskets are then put in place, and between them is inserted a Seitz filter pad. This is supported on a sheet of aluminum foil, which may be 5/1000 in. thick or more, patterned after the gasket and perforated by about 50 pin-holes. The bolts and nuts are adjusted loosely, and after the usual preparation for filtration, the apparatus is sterilized in the autoclave. The bolts are tightened with a small wrench before the apparatus is used.

The filter pad requires support, since atmospheric pressure is sufficient to break through the wet pad. The aluminum support here described has given satisfactory service over a period of six months. There is no visible corrosion in the central part, and but slight corrosion at the exposed edges. Platinum gauze has been used, but no great advantage over aluminum has been discovered. The apparatus assembled for filtration by suction only is shown in Fig. 1.

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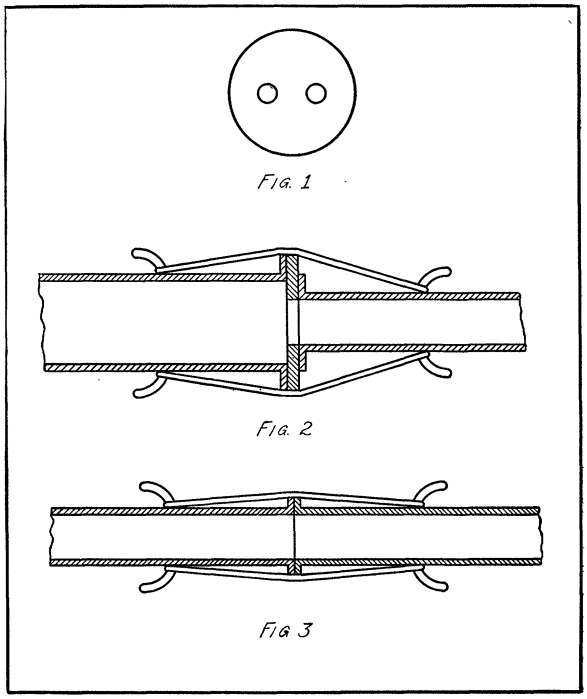
A SIMPLE GLASS CONNECTION

AN easily made glass to glass connection which will serve satisfactorily in many glass apparatuses where



[1] E. O. Jordan and I. S. Falk, "Newer Knowledge of Bacteriology and Immunology," University of Chicago Press, 1928, p. 284.