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An Antibiotic Assay Tray

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SUMMARY: The construction is described of a tray made of an age-hardening aluminium alloy and toughened glass for use in antibiotic assays on agar media.

A tray for holding agar medium, to be used in the assay of antibiotics, was designed with a view to hard wear in sterilization. The tray described below has stood up to sterilization in the autoclave over 100 times without casualty or visible deterioration and may therefore be considered satisfactory.

The trays consist of anodized frames (1) of an age-hardening aluminium alloy (see Fig. 1. for cross-section) with bottoms (2) of toughened glass ('Armour plate'). The glass plates fit *loosely* into a recess at underside of the frames and are held up by a number of powerful cup springs (3).

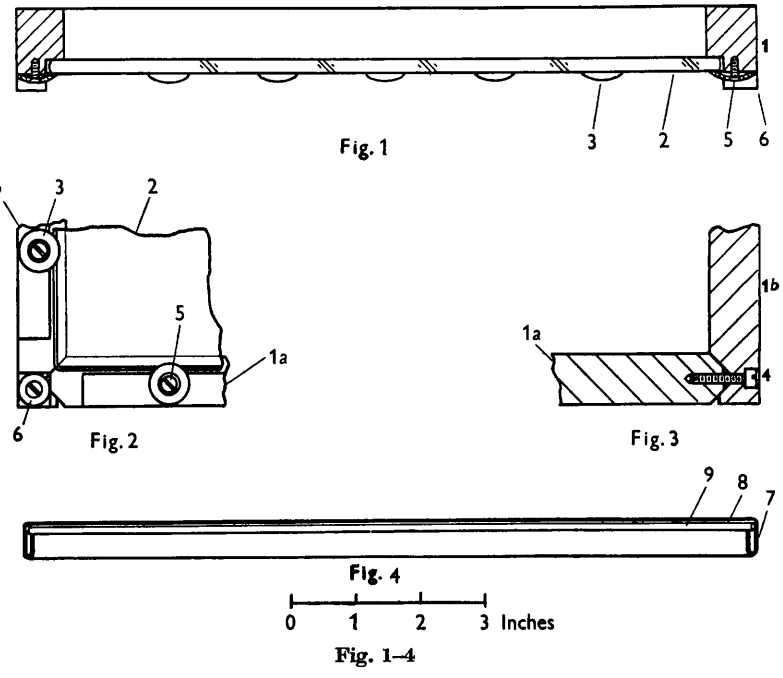

Fig. 1–4

Figs. 2 and 3 illustrate the construction of the frame. Each is made up of two bars (1*a*) the ends of which are truncated 90° prisms and two bars (1*b*) with 90° Vee grooves near their ends. The prisms are pulled into the Vees by

brass bolts (4). A recess is milled on the underside of the assembled frame. The ledges so formed against which the glass plates will be forced are thus all brought into one plane. After drilling and tapping holes for brass clamping screws (5) the frames are marked, taken apart and anodized. Toughened glass plates are unfortunately always somewhat warped. On final assembly it is therefore advisable to leave the corner bolts (4) slack at first, pull up the frame against the glass and finally tighten the corners. It will now be found that the frame is warped slightly. Small feet (6) of anodized aluminium are fitted to the corners and adjusted in height so that their free surfaces lie in a plane parallel to the top surface of the glass plates (2).

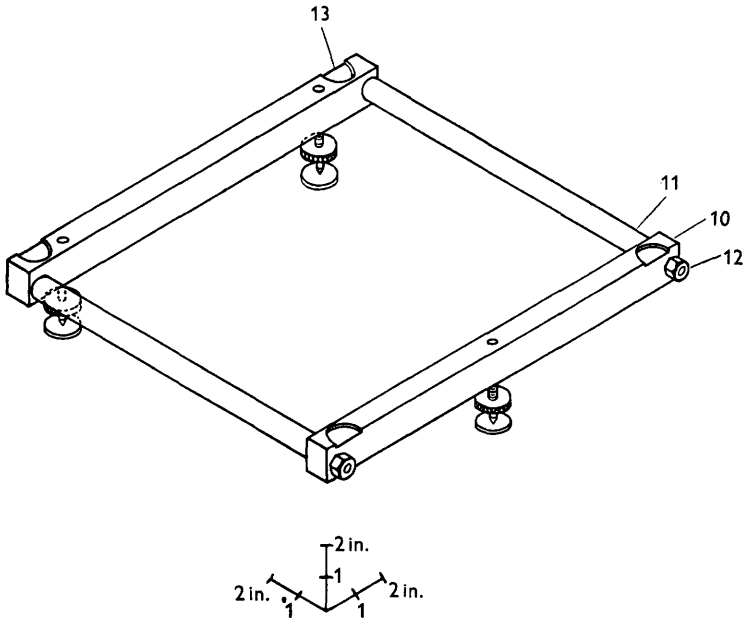

Fig. 5

Lids (7) are provided for each tray. They are folded from pure aluminium sheet as indicated in Fig. 4. Sheets (8) of filter-paper are held up by short pieces of stainless steel wire (9) (1/8 in. diameter) which are sprung into the recesses formed by upturning the aluminium sheet. The wires are arranged approximately 2 in. distant from one another.

Fig. 5 shows one of two levelling stands built up from aluminium alloy bar (10), brass tubing (11) and screwed rod (12). A tray is placed with its feet in the recesses (13) shown. The levelling stand is then adjusted until a spirit-level placed on the glass plate proves this to be horizontal. All the other trays will then be found to be levelled too when placed on the stand and after pouring agar medium will be in layers of uniform thickness.

The trays have been used for a number of different kinds of assay, in some of which antibiotic was incorporated in the agar. Since small amounts of agar are

liable after cleaning to remain lodged in cracks between the glass and the frame, it is advantageous to be able to dismantle the trays for cleaning. This can be done by undoing the retaining cup springs.

A photograph of an actual assay of penicillin is shown in Pl. 1, (facing page 279) in which the tray holds sixty-four 'fish spine' beads. The use of these beads for holding the fluid to be assayed was suggested by G. A. Stewart and R. H. Thorp (private communication).

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