

A Diamond Knife Holder for Microtomes Designed to Take Glass Knives

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Diamond knives for cutting thin sections for electron microscopy were first introduced by Fernández-Morán (1) and have been perfected subsequently by him (2).

Such knives, as distributed, are embedded by means of a special alloy in a rectangular metal mounting which usually measures 11 x 4.5 x 1.5 mm. (2). A holder for the metal mounting, complete with collecting trough, has been described (2), but it was designed primarily for the Fernández-Morán microtome and cannot be fitted directly to microtomes intended for use with glass knives.

In view of the recent increase in availability of diamond knives of the Fernández-Morán type, it appeared desirable to have a holder for the metal mounting of such knives which would be suitable for use with any microtome capable of holding a conventional glass knife (3). Such a holder has accordingly been developed and is described below.

The holder consists of a body 3 inches long machined from a bar of brass 1 inch wide and $\frac{1}{4}$ inch thick, and shaped roughly to resemble a glass knife (3). The back, however, was rounded and the front cut so as to form an angle of 30° with the top (Figs. 1 to 3). The edge of the body which corresponds to the clearance facet of a glass knife was milled down the centre from top to bottom to form a groove (Fig. 1) whose width was such that the metal mounting of the diamond knife would fit into it perfectly (Fig. 2). In its upper part, the groove was just deep enough to accommodate the mounting with one face protruding very slightly,

whilst lower down it was made to take a slider (Fig. 1).

When the slider is in place its upper end forms a base for the groove (Fig. 2) at a level governed by the position of the slider. A screw at the lower end of the slider fits a hole in the body and fixes the slider in the groove at a height which can be varied by tightening or loosening the screw (Fig. 1).

The upper end of the groove and the top of the slider form an open slot into which the metal mounting of the diamond knife can be fitted (Fig. 2). Since, when this is done, the mounting protrudes from the groove, it can be pressed upon by a clamp (Figs. 1 and 2) and held firmly in place (Fig. 3). The clamp is secured by two screws which pass through oval clearance holes in the slider, into holes in the body (Figs. 1 and 2).

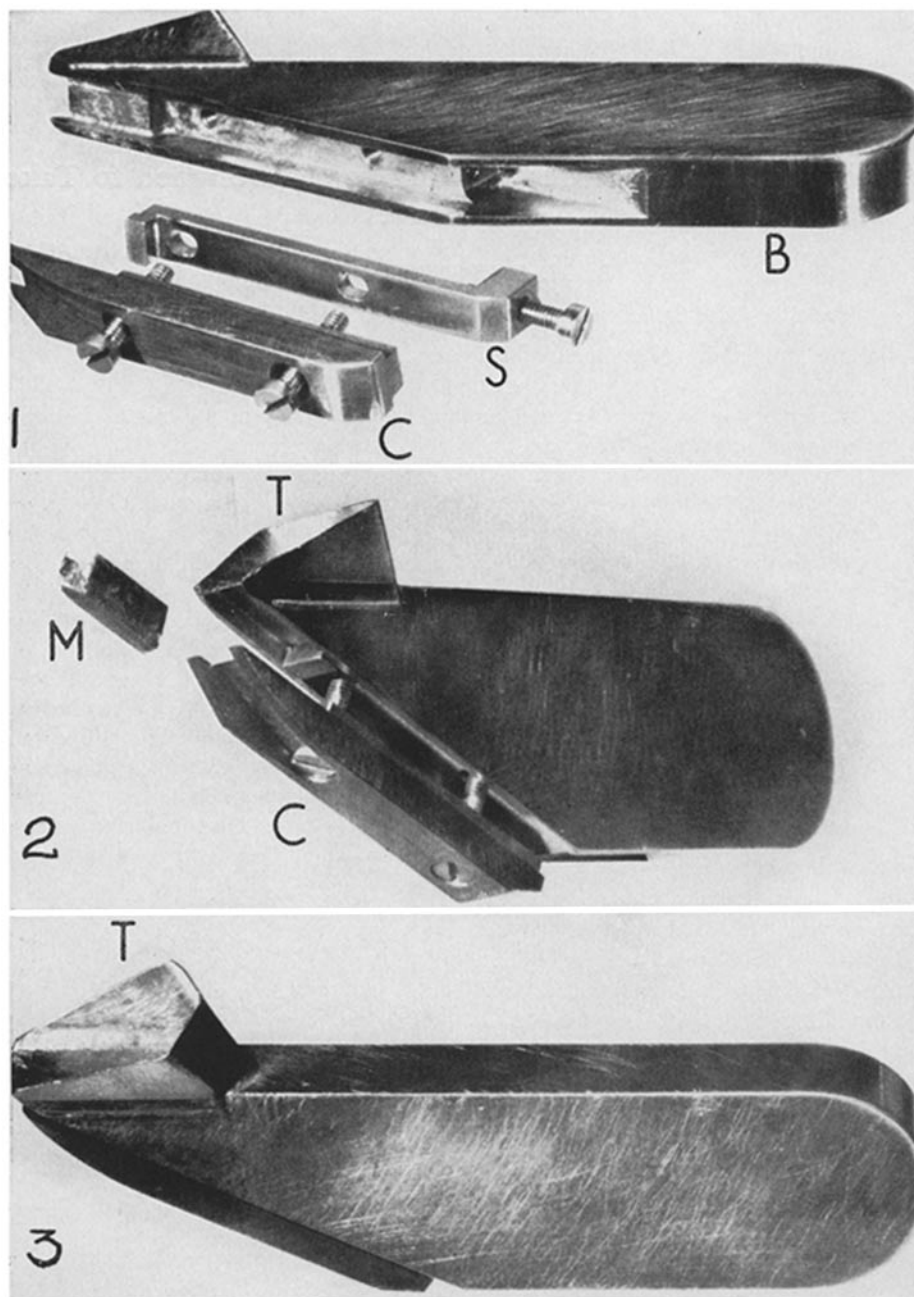
A conventional collecting trough (4) completes the knife holder; it was cut from thin brass sheeting and soldered into position (Figs. 2 and 3).

A diamond knife was kindly presented to us by Professor H. Fernández-Morán.

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FIGS. 1 to 3. Diamond knife holder, for use with microtomes designed to take glass knives, seen in various views. $\times 1\frac{1}{2}$.

FIG. 1. The body (*B*) seen from below and in front to show the groove milled down the edge which corresponds to the clearance facet of a glass knife. A slider (*S*) and a clamp (*C*) lie beside the body with their screws in place; the holes in the body in which these screws engage can be seen.

FIG. 2. The holder in an anterolateral view. The slider is in the lower part of the groove and the slot formed by the upper part of the groove and the top of the slider is apparent. The metal mounting of the diamond knife (*M*) lies close by and the clamp (*C*) has been attached to the body by its screws but not tightened. Notice the collecting trough (*T*).

FIG. 3. View of the fully assembled knife holder from above and to one side to show the trough (*T*). The diamond knife is in place at the front of the holder.