Physiology and Behavior, Vol. 14, pp. 525–526. Brain Research Publications Inc., 1975. Printed in the U.S.A.

BRIEF COMMUNICATION

A Simple Tissue Slicer

C. J. DUFFY AND T. J. TEYLER

Department of Psychology & Social Relations, Harvard University, Cambridge, Mass. 02138

(Received 11 October 1974)

DUFFY, C. J. AND T. J. TEYLER. *A simple tissue slicer.* PHYSIOL. BEHAV. 14(4) 525–526, 1975. – Details of a tissue slicer for use in *in vivo* preparations of brain tissue.

Tissue slicer

A SIMPLE, inexpensive and durable tissue slicer (Fig. 1) has been developed for obtaining thin slices of living brain tissue, such as the hippocampus. The electrophysiological properties of such brain explants can be examined *in vitro* through the use of a tissue chamber. While this slicer was designed for cutting fresh neural specimens it is also well suited for use on fixed or parafin imbedded samples of most kinds of tissue.

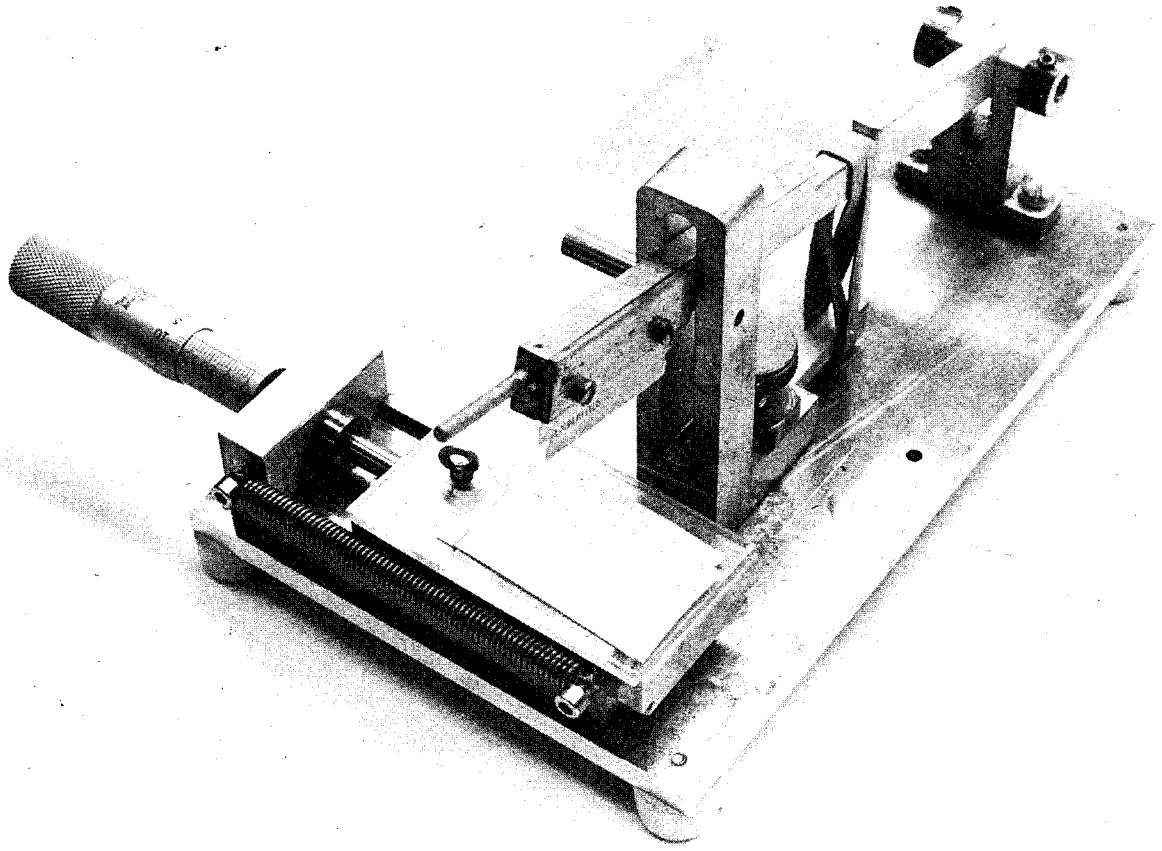

FIG. 1. Tissue slicer.

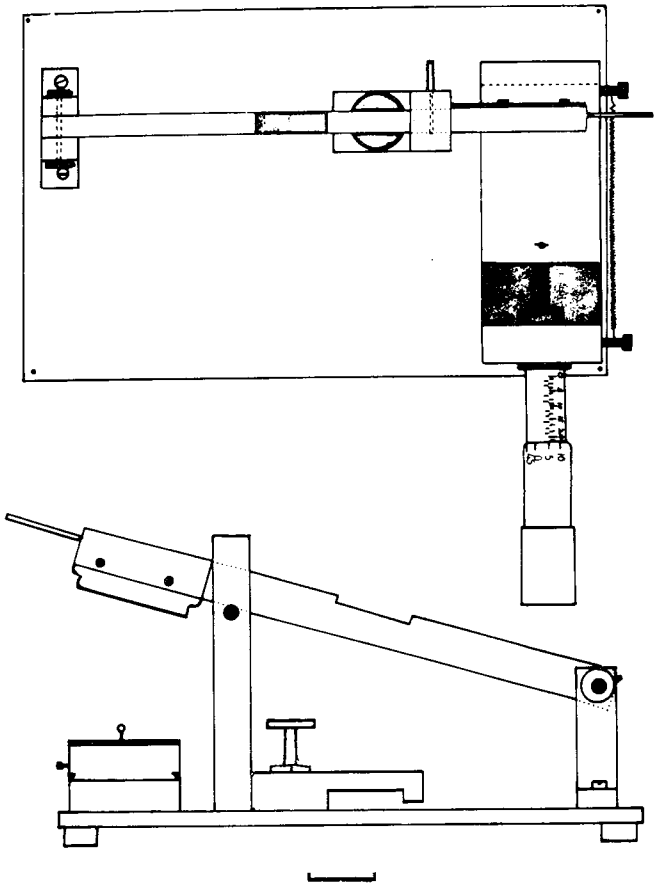

FIG. 2. Schematic diagram of tissue slicer. The dovetail slide and millimeter micrometer may be purchased as a unit from Stolting Inc., Chicago. Scale mark equals one inch.

The slicer is constructed of stainless steel and brass, although any strong, non-corrosive material might be used. A cutting arm is pinioned within the pronges of a U-shaped bracket which is bolted on to the base at the end opposite the micropositioner (Fig. 2). The cutting blade (a standard, double-edged razor blade) is held in position on the cutting arm by a removable plate, making the blade easily replaceable. A second U-shaped bracket directly behind the micropositioner prevents any lateral movement during a cut. A small handle extends from the cutting arm to facilitate the raising of the arm without disturbing the blade or the tissue that has just been cut.

A block attached to the base immediately behind the second bracket holds a large, flat-head bolt which acts as an adjustable stop for the descending cutting arm. This stop allows the blade to cut through the tissue without having to absorb the full force of hitting the platform. A hook extending from the block provides an anchor for a rubber band which passes over the cutting arm to increase the force with which the cutting arm falls. (This is unnecessary when dealing with fresh neural tissue.)

A small plastic plate is attached to the micropositioner platform by a small screw allowing for the adjustment of the angle between the tissue and the blade. A small rectangle of filter paper is taped to this plate. The filter paper protects the blade's edge and prevents the tissue from moving while on the platform.

Adjustments in the blade's position relative to the platform are crucial. By loosening the screws on the blade holder and lowering the cutting arm until the first complete contact between the blade and the platform is made, and then tightening the screws, one can be assured of a complete cut anywhere along the blade. The stop bolt is adjusted to the proper height for a given blade position before each use of the slicer.

In using the slicer to section living neural tissue the best results are obtained if a fine, camel hair brush is used to remove the cut slice from the side of the blade before the blade is again lifted. Care must be taken when lifting the arm after having made a cut. When done too abruptly this action may lift and displace the uncut tissue.