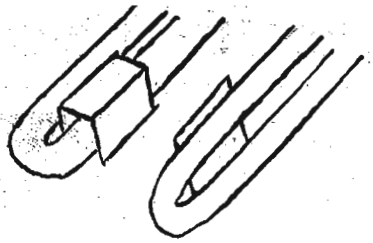
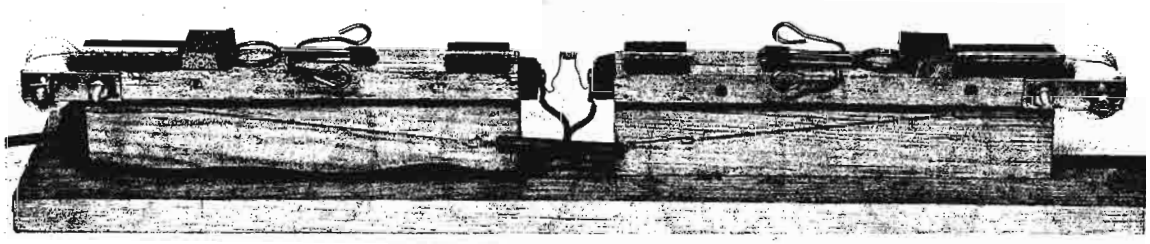
Seecof, R. L. City of Hope Medical Center, Duarte, California. An apparatus for drawing micropipettes.

With this apparatus micropipettes can be fashioned which are suitable for making injections into Drosophila. The apparatus is very inexpensive to build and 100 pipettes per hour can readily be made. These pipettes can be used in the injection apparatus described by Seecof (DIS 41:185).

To make pipettes, a piece of capillary tubing (O.D. 0.7 - 1.0 mm) about 18 cm long is inserted into the two 1.5 in. guides and the heating element coil at the top-center of the apparatus. The two Day pinchcock clamps are then each pulled forward 1.25 in. to grasp the capillary tubing where it protrudes from the guides. This motion also stretches the spring because each clamp is attached to the spring by a cord passing around the spool at each end of the apparatus. The heating element is then energized by a switch (not shown), the capillary tubing softens, and two pipettes are simultaneously drawn by the spring tension. The element is de-energized immediately afterwards to avoid excessive heat. The pipette tip can later be broken to a proper-sized opening with forceps.





Most of the dimensions of the apparatus are not critical because the shape of the pipette tip can be controlled by the spring tension (adjustable by changing the length of the cord), the size and shape of the heating coil, and the temperature of the coil (adjustable by changing the voltage). An apparatus of the dimensions given here operates well at 7.5 volts and 2.72 lbs. of spring tension.

Each piece of cord passes from the spring, through a 2 in. guide, around a spool, through a 2 in. guide, through a 0.75 in. wood block and a 0.25 in. foam-rubber bumper glued to the block, and is attached to the clamp. All six guides are 3 mm pyrex tubing and are glued in place with Duco cement. Guides and heating coil are mounted in the same vertical plane. The four guides on the top of the apparatus are raised 3/16 in. on blocks so as to be in the same horizontal plane as the clamp tips and the heating coil. The heating coil is 3/8 in. long and was fashioned by winding 9 turns of wire around a piece of 3 mm tubing. The heating element and connecting wires are connected at bakelite terminal strips. The strips and element are mounted in a gap 2 in. wide. The sewing-thread spools are 1 3/16 in. long and ride on 0.25 in. bolts. The top of the apparatus is 1.25 in. wide and its overall length, including spools, is 22.5 in.

The tips of the clamps are modified with pieces of metal as shown in the close-up, to give a grasping area about 0.5 in. long and 3/16 in. high. The metal pieces and clamp tips are covered with pieces of 0.5 in. long latex tubing (1/8 in. bore, 1/16 in. wall). The metal added to the tips was obtained by cutting pieces from Hunt paper clips (metal about 0.5 mm thick).

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