

Accessories for easily-made projector

By GEOMETER

WHILE a projector employing a complete camera (or a separate camera lens or enlarger lens) can be used merely with an enlarger bulb for projecting small profiles, the arrangement is impracticable for enlarging because of the concentration of light in the centre area, which would leave the edges of an enlargement without definition.

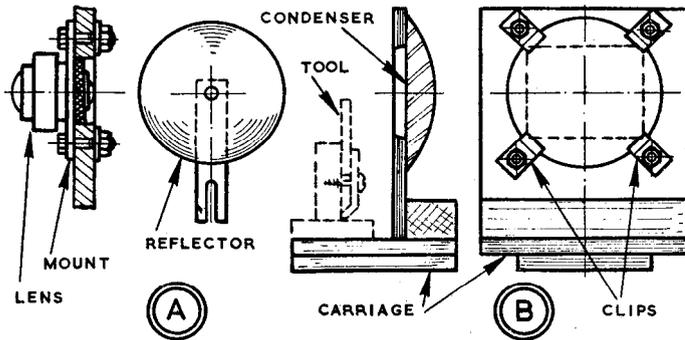
condenser in place, eliminating so far as possible dull patches from the projected light area.

If a separate lens is to be used instead of a camera on the front wall of the box, a mount can be made for it as at A. Aluminium, brass or steel sheet, round or square, and about 1/16 in. thick is provided with a large central hole for the lens to be clamped by its ring nut. Three or four smaller holes at the edge or corners allow for

two pieces of wood, one sliding on top of the angle iron guides in the box, the other between them, is surmounted by a piece of upright plywood which can be stiffened by an angle bracket or cross-wise block. In it, the aperture is cut centrally about the lens axis and the condenser held by four light metal clips with screws and nuts—straight pieces of metal with the ends turned up to the curved surface. Tool, film or plate to be projected is on the other side—a tool, for example, being clipped to a block for standing on the carriage.

The mounting for a normal (twin lens) condenser is as at C, using two pieces of upright plywood. One has the aperture, rectangular or square as before, while the other has a circular hole some 1/4 in. less than the condenser in diameter. Both condensers are held by clips. They can be "open" or boxed in; and their spacing is not important. Horizontal strip metal guides with packing to take a plate or film carrier can be attached by screws and are likewise applicable to the condenser at B.

A plate or film carrier can be as at D, consisting of a sheet metal backing plate, with angles Y, Y1, fixed by countersunk rivets, and separate clamping strips, Z, Z1, with screws and knurled nuts. The aperture can be 3-1/4 in. x 2-1/4 in. for a plate to be supported in front of it. Countersunk, soldered-in screws can be used in the clamping strips, Z, Z1; and slots in the angles will permit them to be quickly put in to hold plate (and film) in place.



However, distributing the light evenly over an area to cover the plate or film overcomes this defect; and in the same way a profile anywhere in the lighted area, such as that of a contour gauge, can be clearly seen. It is done by using a condenser next to the light source, the bulb; then whatever is to be projected—a film or a tool—is placed for focusing between the condenser and the camera or the projection lens.

Usually, a condenser is made with two plano-convex lenses (each with one flat and one rounded side); but if expense must be considered one alone will give very good results, particularly if used with a reflector behind the enlarger bulb. In either case the one or the two can be the inexpensive moulded type of condenser, while the reflector can be any shallow plated type, 4-1/2 in. or 5 in. dia.

Mounting for such a reflector can be as at A, a piece of flat strip steel fixed by a rivet to the reflector and with a slot at the free end. By this it can be held by a screw, washer and wingnut to the back wall of the box and its best position found by swinging it about with the light on and the

mounting by screws or bolts to the box. An enlarger lens, of course, which has an integral flange only needs mounting in this way.

The diameter of the condenser is governed by the length and height of the area covered. For a 3-1/2 in. x 2-1/2 in. plate and a 3-1/4 in. x 2-1/4 in. film negative, it must be 4 1/2 in., though it need be only 3-1/2 in. for a 2-1/4 in. square film negative.

The mounting for a single condenser is as at B. The carriage consisting of

