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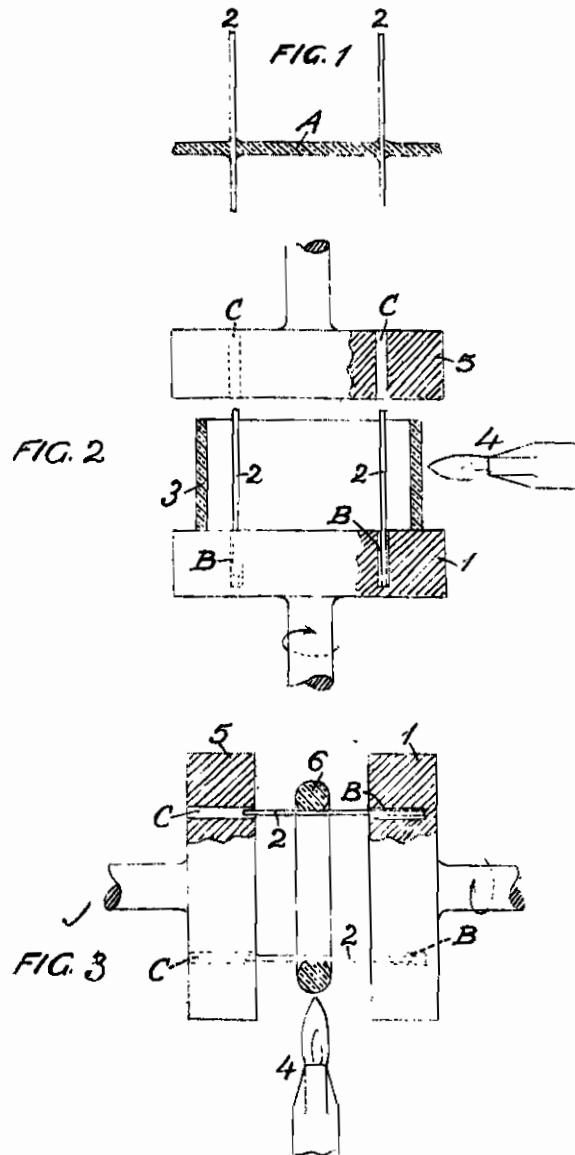
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METHODS OF MANUFACTURING ELECTRON TUBES

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METHODS OF MANUFACTURING ELECTRON TUBES

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This invention relates to the manufacture of discs or cups made of pressed glass and carrying electric conductors in order to serve as the bottom of electron tubes, these conductors being the inleads thereof.

The invention aims to obviate certain disadvantages of the prior methods of manufacturing these structures, as will be understood from the following description and the accompanying drawing, in which

Fig. 1 is a sectional view showing a structure of this kind, Fig. 2 is a partially sectioned view of a prior device used in the manufacture of such structures, Fig. 3 is a partially sectioned view illustrating one embodiment of the invention.

As shown in Fig. 1 by way of example, the structure or article to be manufactured consists of a disc A, made of pressed glass, and conductors 2 sealed into this disc. The disc A may be cup-shaped.

According to Fig. 2, the device previously used for manufacturing structures of the kind represented in Fig. 1 comprises a horizontal die 1 rotatable on its vertical axis and provided with cylindrical recesses or bores B, and a counter-die 5 that has bores C arranged to coincide with the bores B. The bores B, C are calculated to receive the conductors 2. The glass from which the disc A is to be made is employed in the shape of a tube 3 adapted to be placed on the die 1 and to encircle the conductors 2 mounted in the recesses B. With tube 3 in this position the die 1 is set rotating while tube 3 is heated by means of a gas jet 4. When the glass tube 3 is soft enough the die 5 is lowered so as to compress the glass body 3 and convert it into the disc A, the conductors 2 entering the bores C.

This method has the following disadvantages.

The glass tube 3 when softening sinks down on the die 1 and thereby loses a great deal of its heat, this die acting to conduct the heat away from the glass 3. As a result it is difficult, and in the case of hard glass impossible, to soften the

glass body 3 uniformly. The pressing operation hence fails to be satisfactory. In addition the flame at 4 must be very hot, whereby the conductors 2 are highly oxidized. The metal oxide 5 so produced is in part absorbed by the glass 3 and pressed into it, thus impairing the thermal and dielectric properties of the disc A.

According to the invention the dies 1, 5 are both arranged to revolve on a horizontal axis, as will be seen in Fig. 3, and the vitreous material for making the disc A is in the shape of a ring 6 supported by conductors 2 and midway between the dies. The vitreous material is thus easier to heat and the gas jet 4 hence may be less effective than in the case of Fig. 2. The gas jet 4 is adjusted so that the dies shall not be much heated. By the dies revolving about an axis common to them the softening glass is prevented from dripping. The glass also does not contact with the dies until the pressing operation takes place. Consequently, the loss of heat of the glass is less than in the case of Fig. 2. Furthermore, the expenditure in heat being less than in the case of Fig. 2 the conductors 2 are less liable to oxidize 25 and thereby to deteriorate the glass from which the disc A is to be made. Moreover, as the conductors 2 are located at their ends in the dies 1, 5 they are cooled by the dies, which thus in their turn aim to prevent the conductors from oxidizing.

For using the pressing dies 1, 5 shown in Fig. 3 the conductors 2 are mounted in the recesses B of die 1 and the glass ring 6 is inserted over these conductors, whereupon the die 5, having bores C 35 for receiving the conductors 2, is likewise inserted over them. The structure 1, 2, 6, 5 is then set rotating while at the same time the ring 6 is softened by the gas jet 4. Die 5 is then advanced toward die 1 so that ring 6 is compressed and thus converted into the disc A into which at the same time the conductors 2 are sealed in this way.

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