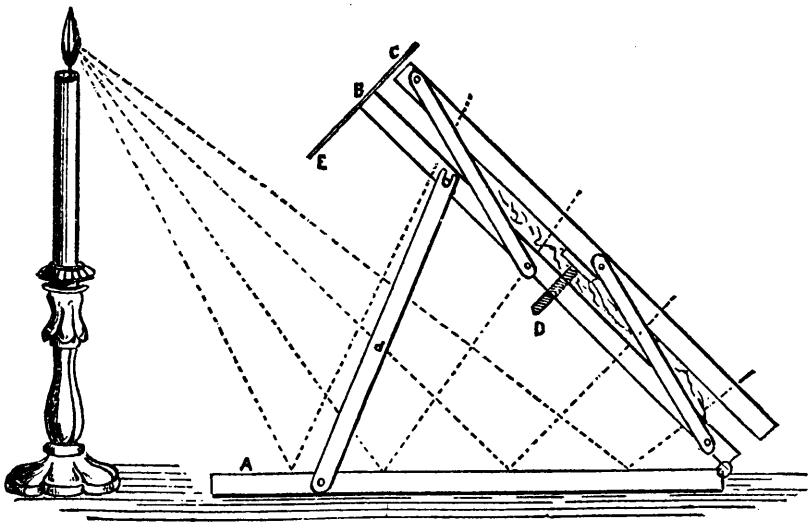

THE SKIAGRAPH.

glass around the bulb or enlargement of the tube. Another feature of this improved lamp is a modification in the filament itself, which is so made as to have a less resistance at one terminal than at the other. When carbon filaments are used for lighting by incandescence, it is found that the carbon is carried from the negative to the positive end—a phenomenon which has been described as "electrical carrying." The amount depends, it appears, on the resistance of the filaments, the degree of incandescence, the E. M. F. between the clamping-wires or electrodes, and the condition of the vacuum. To obviate this difficulty, as far as is possible at present, Edison makes one end of the carbon, the negative, thicker than the other, so as to reduce the resistance at that end of the bridge; but he says, definitely, that in the present state of the art, it is impossible to manufacture a carbon which will not eventually be destroyed. The tube seen at the top of Fig. 1 is for attaching to the vacuum apparatus, and when the globe has been exhausted or otherwise completed, it is melted off and sealed, as seen in Fig. 2. To prevent any serious inconvenience from failure of lamps, arrangements have been made by which two can be placed close together, and on the failure of one the current will be automatically switched to the other. There are several ways of carrying out this part of the invention, but Fig. 3 will probably serve to explain that and some other features of the system, as it shows how one lamp may be put out without extinguishing others in the series. A B is the main circuit, C the field-magnet circuit with the resistance, and C is a derived circuit with the electro-dynamometer I inserted, G is the generator, and *s s* are switches which can be used to short circuit the branches 5, 7, 8, 10, and in the case of 8, the lamp is shown short-circuited and extinguished. In 6 and 9 are illustrated the means provided for avoiding any difficulty from a lamp breaking. Here there will be seen a small magnet with a pivoted armature, and a resistance shunt-circuit. In the ordinary condition, when the lamps are at work the magnet is excited and keeps the armature up, thus breaking the resistance-circuit, but should a lamp fall, the circuit is momentarily broken, the armature drops on to the lower stop, and the current passes through the resistance shunt instead of through the lamp branch circuit. To prevent the blackening of the glass globes by the deposition of carbon, Mr. Edison attaches to each lamp a short magnet or a coil of wire which attracts the highly electrified carbon vapour downwards towards the clamps.

Mr. Edison has also patented some improvement in arc lamps, the chief feature of which is rotating one or both carbons around their longitudinal axes at a high speed—some two or three thousand revolutions a minute—the object of which is "to secure a steady light." As a motor he uses a Pacinoti ring or clockwork. Such an arrangement appears to unnecessarily complicate an already complicated device, and it is doubtful whether the advantages to be gained compensate for the extra cost and liability to derangement.—*English Mechanic*

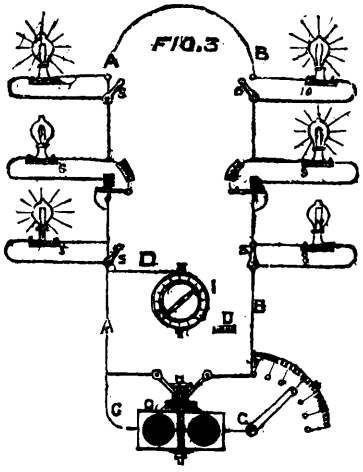


FIG.1


FIG.2