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ELECTRONIC LENS
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Fig. 1

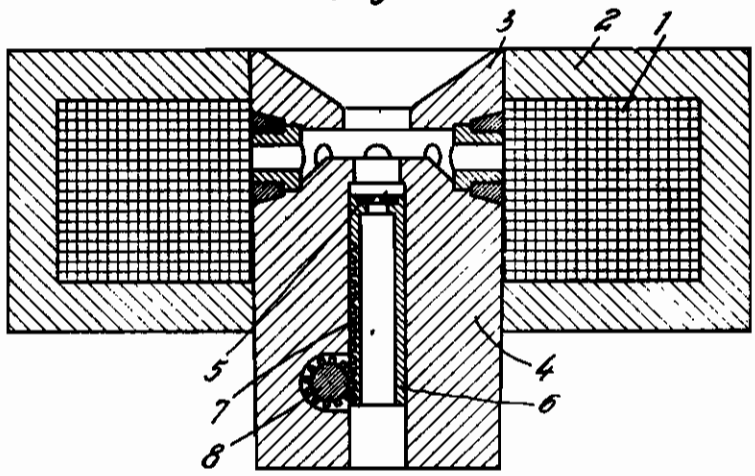
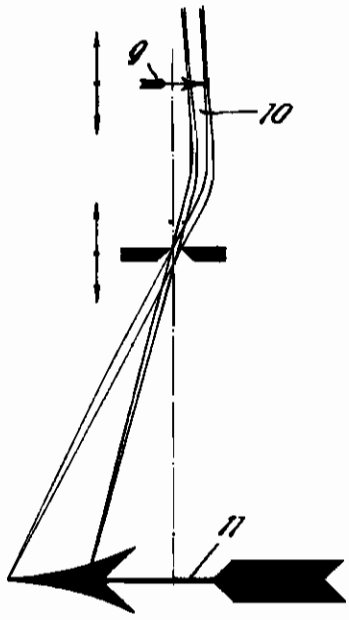



Fig. 2

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# ALIEN PROPERTY CUSTODIAN

## ELECTRONIC LENS

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This invention relates to an electronic lens cooperating with a diaphragm and serving as an objective for an electronic microscope.

The object of the invention consists in designing this arrangement in such a manner that the field of view is greater than the objective diaphragm, even if the latter is so small as to permit a fading out of the electron rays to the electron-optically favorable value. This value may then be obtained if the aperture of the objective diaphragm is equal to the aperture of the condensing lens increased by the aperture of diffraction of the structures to be dissolved. The objective diaphragm is arranged according to the invention in the focus of the lens at the side of the image. With this arrangement the diaphragm arranged between the object and the field avoids with certainty a restriction of the field of view of the object. If the objective diaphragm is arranged in the focus of the lens at the side of the image, the further advantage is obtained in that the diaphragm may be designed with the greatest possible diameter for the attainment of a given small aperture of the objective diaphragm. This is advantageous, since for practical reasons too small diaphragm diameters are reluctantly employed.

To adjust various focal lengths with the aid of an electronic lens, the objective diaphragm is so arranged according to the invention as to be displaced longitudinally of the optical axis. In this case, the devices for displacing the diaphragm are preferably so designed that the displacement is effected under vacuum during the operation of the electronic microscope.

In the accompanying drawings is shown an embodiment of the invention in diagrammatic form.

Fig. 1 is a sectional view of an electromagnetic objective lens of an electronic microscope. 1 denotes the winding of the lens which is surrounded by a jacket 2. At the ends of the jacket 2 are arranged the pole shoes 3 and 4 of the lens. A diaphragm 5 secured to a tubular carrier 6 is allotted to the objective. To enable the displacement of the diaphragm in the direction of the ray, the tubular holder is designed at the side of the lens in the form of a rack 7 cooperating with a pinion 8. The pinion may be rotated in a known manner exteriorly of the apparatus by means of a conical plug having a ground surface to maintain the vacuum at a constant value. In this manner, the diaphragm 5 may be displaced until it lies in the focus of the lens at the side of the image.

Fig. 2 shows the path of rays of an objective lens according to the invention. 9 denotes the object to be magnified and 10 is the electron ray coming from the cathode. The diaphragm 5 is arranged as will be seen from Fig. 2 in the focus of the lens at the side of the image. 11 denotes the image of the object magnified by the lens. The object 9 and the diaphragm 5 may each be displaced both in the upward and downward direction.

Similar advantages may be obtained also when employing electrostatic lenses.

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