

[54] **ELECTRON OPTICS FOR A MINIFYING IMAGE TUBE**

[72] Inventors: **Nathan D. Levin**, Los Altos Hills; **Andreas Niewold**, Sunnyvale; **Wilfrid F. Niklas**, Portola Valley, all of Calif.

[73] Assignee: **Varian Associates**, Palo Alto, Calif.

[22] Filed: **Oct. 3, 1969**

[21] Appl. No.: **863,508**

[52] U.S. Cl. **250/213 VT, 313/65 R**

[51] Int. Cl. **H01j 31/50**

[58] Field of Search **250/213 VT; 313/82 R, 65 R**

[56] **References Cited**

UNITED STATES PATENTS

2,928,969	3/1960	Schneeberger	313/65
3,026,437	3/1962	Niklas	313/65
3,303,345	2/1967	Wulms	250/213
3,474,275	10/1969	Stoudenheimer et al.	250/213 X

Primary Examiner—Walter Stolwein
Attorney—Stanley Z. Cole and Gerald L. Moore

[57] **ABSTRACT**

A minifying image tube, such as an X-ray converter or image intensifier tube, is disclosed employing a curved photocathode for converting a photon image into an electron image. A flat image converter screen is provided for converting the minified electron image into an optical output image. An electrode structure is disposed between the photocathode and the flat converter screen for accelerating and focusing the electron image upon the converter screen. The electrode structure includes a plurality of coaxially aligned axially spaced cylindrical electrodes of decreasing diameter taken in the direction from the photoemitter toward the converter screen. The final or anode electrode projects into a constricted electron exit aperture in the next preceding electrode structure in order to shape the equipotentials at the entrance of the anode such as to obtain uniform resolution of the electrode image focused upon the flat converter screen over substantially the entire area of the converter screen.

4 Claims, 3 Drawing Figures

