

[54] **COMBINED SYSTEM FOR ACOUSTICAL-OPTICAL MICROSCOPY**

[75] Inventors: **Lawrence W. Kessler**, Glenview; **Adrianus Korpel**, Prospect Heights, both of Ill.

[73] Assignee: **Zenith Radio Corporation**, Chicago, Ill.

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[58] Field of Search.....**350/3.5; 356/72; 340/5 H, 356/5 MP; 73/67.5 R, 67.5 H**

[56] **References Cited**

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Primary Examiner—Ronald L. Wibert

Assistant Examiner—F. L. Evans

Attorney, Agent, or Firm—John J. Pederson et al.

[57] **ABSTRACT**

A combined acoustical-optical inspection system, operating at microscopic levels, in which an object to be studied is immersed in water or other sonic fluid propagation medium in close proximity to a partially-metallized semi-reflective mirror formed on an elastically deformable interface surface of a faceplate that engages the sonic propagation medium. The object is insonified with high-frequency acoustic energy, preferably at 100 MHz or more, from the side opposite the interface surface, producing a ripple pattern on the interface surface representative of the acoustic properties of the object. The object is scanned with a laser beam, through the interface; a reflected fraction of the beam is utilized to develop an acoustic image of the object and a transmitted fraction of the beam is employed to develop a precisely correlated optical image of the object. The two images may be superimposed for interpretation purposes.

15 Claims, 7 Drawing Figures

