

- [54] **RAPID THREE-DIMENSIONAL SURFACE DIGITIZER**
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[57] **ABSTRACT**

The invention is a method and apparatus for automatic mensuration of three-dimensional surfaces. The surface is sensed via non-contact optical triangulation means and the optically produced image measured by electronic means. The electronic measurements are encoded as binary data and passed to a digital computer for storage, analysis and other functions. The invention is significant because of the speed and relative simplicity of the method and a provision for alleviating shadowing from large surface irregularities. The apparatus has no moving parts, excepting a mechanism to provide for movement of the apparatus relative to the surface so as to progressively view the entire surface. This invention projects two or more planes of light which intersect the surface at known angles, producing illuminated lines. Said lines are viewed by a video type camera placed at a known angle away from the planes so that displacements in the line may be sensed. Electronic circuits detect and measure points on the line and transfer the data to a digital computer.

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**5 Claims, 5 Drawing Figures**

