

Abstract

Apparatus and Method to Measure Three-Dimensional Data

The present invention relates to an apparatus to optically measure three-dimensional data of an object (7) to be viewed, comprising:

a light source (8) for illuminating an object to be viewed,

a means (11) for generating multiple parallel bundles of parallel light rays, each of said parallel bundles of parallel light rays containing image information of the object to be viewed and said parallel bundles of parallel light rays being separated from each other;

a means (9) for collecting the light rays in said parallel bundles of parallel light rays and directing them on an imaging means;

an imaging means (2) for generating images of the incident parallel bundles of parallel light rays, wherein each image corresponds to one specific parallel bundle of parallel light rays and wherein the generated images are separated from one another in a two-dimensional imaging area (12) describable by a set of two coordinate axes;

an analyzing device (11) for extracting length, width and height information of the object to be viewed from the coordinate values of the points of incidence of corresponding light rays originating from the very same point (h_1) of the object (7) to be viewed but travelling in different bundles of parallel light from the object to said two-dimensional imaging area (12).

Furthermore, the invention relates to a corresponding method to optically measure three-dimensional data of an object to be viewed.

(Fig. 8)