ABSTRACT OF THE DISCLOSURE

AN APPARATUS FOR ULTRASONIC INSPECTION OF FLAWED MATERIALS

An apparatus for ultrasonic inspection of flawed materials is disclosed. The apparatus of the present invention comprises a housing assembly having an inner chamber and an outer chamber; two compression wave transducers being angled to produce refracted ultrasonic shear wave beams; two coupling monitoring transducers being used to receive ultrasonic signals from the compression wave transducers; a sensor holder attached to the housing assembly at a plurality of points; and a brush assembly including a plurality of annular brushes to ensure a fluid tight seal in the process of ultrasonic inspection and provide the appropriate water column level for accurate inspection. The two coupling monitoring transducers are used only as receivers of ultrasonic signals to check for the presence of water in the inner chamber of the apparatus. In operation, the apparatus is controlled by a robot, which rotates the apparatus around each to-to-be tested fastener for crack detection automatically.

(Fig. 1 is suggested for publication)