(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :04/10/2025
(21) Application No.202511095485 A
(43) Publication Date : 05/12/2025

(54) Title of the invention : AN INTEGRATED DEVICE FOR DETECTING CRACKS IN CRANKSHAFTS

(51) International classification	:G01N0021950000, B23C0003060000, G01N0027901300, B64F0005600000, G01N0029260000
(31) Priority Document No	:NA
(32) Priority Date	:NA
(33) Name of priority country	:NA
(86) International Application No Filing Date	: :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The invention discloses an integrated device for detecting cracks in crankshafts, comprising ultrasonic transducers (101), electromagnetic sensors (102), a digital signal processor (103), an automated fixture (104), and a real-time display interface (105). The device ensures accurate detection of surface and subsurface cracks, supports predictive maintenance, and reduces inspection errors. It is compact, adaptable for production lines, and enhances crankshaft reliability in automotive and industrial applications.

No. of Pages : 14 No. of Claims : 6