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(71) Applicant(s)
Jentek Sensors Incorporated
(Incorporated in USA - Massachusetts)
Clematis Avenue, Waltham,
MA 02453-7013, United States of America

(72) Inventor(s)
Neil Goldfine
Darrell Schlicker
Andrew P Washbaugh

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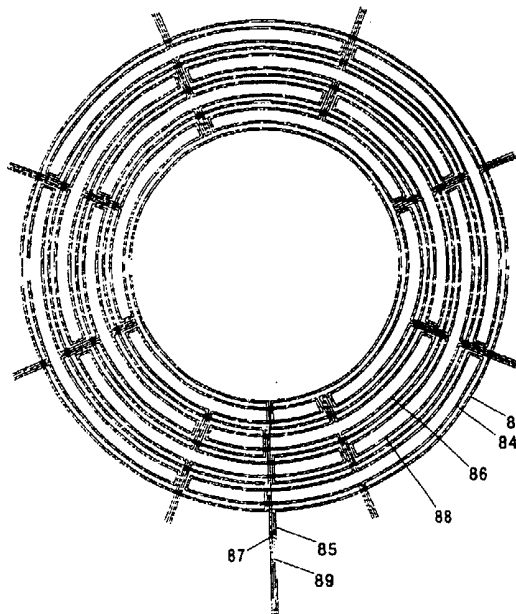
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(72) cont
Vladimir Zilberstein
Vladimir B. Tsukernik

(74) Agent and/or Address for Service
Page White & Farrer
54 Doughty Street, LONDON, WC1N 2LS,
United Kingdom

(54) Abstract Title
Eddy-current sensor arrays

(57) Inductive sensors measure the near surface properties of conducting and magnetic material. A sensor may have primary windings with parallel extended winding segments to impose a spatially periodic magnetic field in a test material. Those extended portions may be formed by adjacent portions of individual drive coils. Sensing elements provided every other half wavelength may be connected together in series while the sensing elements in adjacent half wavelengths are spatially offset. Certain sensors include circular segments which create a circularly symmetric magnetic field that is periodic in the radial direction. Such sensors are particularly adapted to surround fasteners to detect cracks and can be mounted beneath a fastener head. In another sensor, sensing windings are offset along the length of parallel winding segments to provide material measurements over different locations when the circuit is scanned over the test material. The distance from the sensing elements to the ends of the primary winding may be kept constant as the offset space in between sensing elements is varied. An image of the material properties can be provided as the sensor is scanned across the material.



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