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RU 002354827 C2 **RU 002074314 C1**
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(54) Title of the Invention: **A Method of electromagnetic defectoscopy for multi-string wells and the electromagnetic downhole defectoscope**
Abstract Title: **A Method of electromagnetic defectoscopy for multi-string wells and the electromagnetic downhole defectoscope**

(57) This invention relates to the monitoring of the integrity of casing, tubing and other strings in oil and gas wells. The technical result of this invention consists in increased accuracy and trustworthiness in detecting and locating transverse and longitudinal defects in well completion components and downhole equipment, in both the magnetic and non¬ magnetic first, second and other metal barriers. Electromagnetic defectoscopy in multi-string wells includes measuring EMF induced in a coil by eddy currents generated in metal barriers by the decay of the electromagnetic field produced by magnetisation current pulses in the coil. A series of pulses of fixed duration in the range of 0.1-1000 ms is fed to each exciter-and-pickup coil to sequentially magnetise all metal barriers starting from the nearest one, wifh pulse durations increasing for each next barrier. The recorded data are saved and processed by comparing them with model data, and the processing results indicate defects in the metal barriers. The downhole electromagnetic defecfoscope contains a case, axially oriented coils with their magnetic axes coinciding with the tool's magnetic axis, and an electronic module, and at least two exciter-and- pickup coils, each consisting of an exciter coil and a pickup coil with a single core. The exciter-and-pickup coils are of different sizes and are spaced apart by a distance of not less than the length of the larger exciter-and-pickup coil.

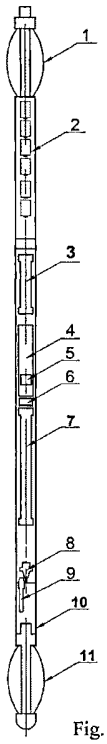

Fig. 1

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