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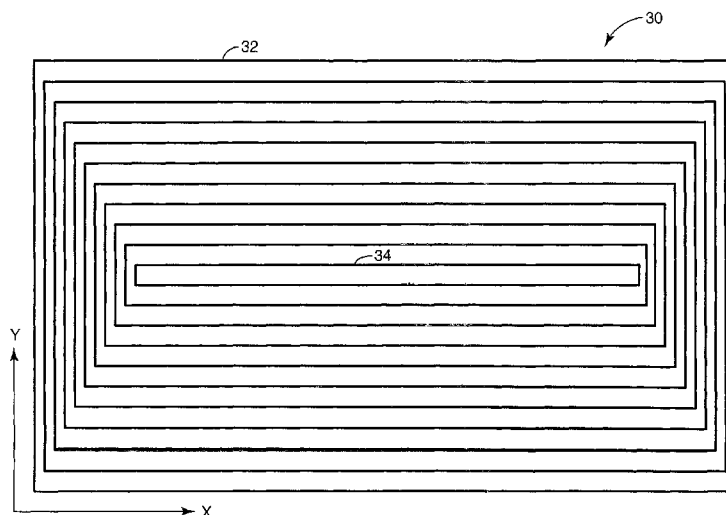
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[Continued on next page]

(54) Title: MULTI-LOOP ANTENNA FOR RADIO-FREQUENCY IDENTIFICATION



(57) Abstract: The invention provides a multi-loop antenna (30) that produces an electromagnetic field having a magnitude of at least an interrogation threshold of a tag for a substantial portion of an interrogation region located in a plane parallel to the antenna. The antenna may include a plurality of loops, including one or more powered loops (32, 34) and one or more parasitic loops. The parasitic loops receive power from mutual coupling with the powered loops causing current to flow within the parasitic loops, which contributes to the profile of the magnetic field. As a result, each parasitic loop may be tuned to provide control over the magnitude of the electromagnetic field. The powered loops and the parasitic loops may be varied over the interrogation period to reduce any area of the interrogation region where the magnitude of the field remains below the interrogation threshold throughout the interrogation period. The powered loops and the parasitic loops may reside on a single layer or may be arranged on multiple layers (Fig. 5, 6).



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