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(54) Title: METHOD AND SYSTEM FOR ACCURATE ALIGNMENT AND REGISTRATION OF ARRAY FOR DNA SEQUENCING

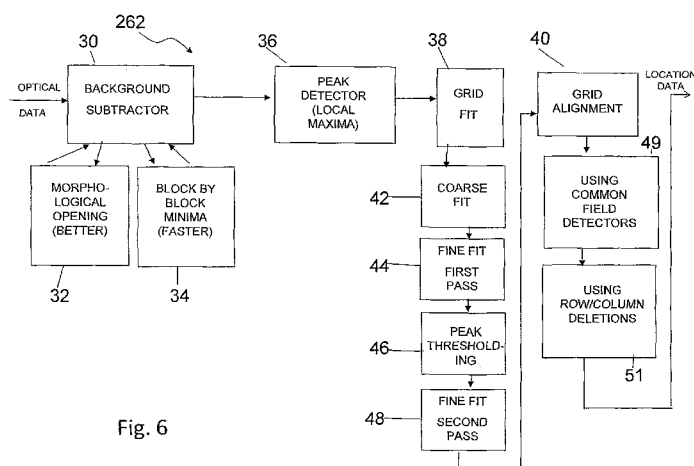


Fig. 6

(57) Abstract: In a genome sequencing system and methodology, a protocol is provided to precisely and accurately align and register an image of a planar array of nanoballs for optical analysis. Minimization techniques and Moire averaging are used to correct or errors in subperiod x-y offset, scale, and rotation. In Moire averaging, magnification is set so that the pixel period of the imaging element is a noninteger multiple of the site period. Accurate registration is achieved by providing for pre-defined pseudo-random sets of sites, where nanoballs are prevented from attachment to the substrate so that the sites of the array can be used in a pattern matching scheme as registration markers for absolute location identification. Information can be extracted with a high degree of confidence that it is correlated to a known location, while at the same time the amount of information that can be packed on a chip is maximized.