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Hudek et al.

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(54) **PROCESS FOR CONTROLLING THE PROXIMITY EFFECT CORRECTION**

(75) Inventors: **Peter Hudek**, Jena (DE); **Dirk Beyer**, Weimar (DE)

(73) Assignee: **Leica Microsystems Lithography GmbH** (DE)

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(51) **Int. Cl.**
G03F 9/00 (2006.01)

(52) **U.S. Cl.** **430/30; 430/296; 430/942; 716/19**

(58) **Field of Classification Search** **430/30, 430/296, 942; 716/19**
See application file for complete search history.

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Primary Examiner—Christopher G. Young
(74) *Attorney, Agent, or Firm*—Houston Eliseeva LLP

(57) **ABSTRACT**

A process for controlling the proximity effect correction in an electron beam lithography system. The exposure is controlled in order to obtain resulting pattern after processing which is conform to design data. In a first step an arbitrary set patterns is exposed without applying the process for controlling the proximity correction. The geometry of the resulting test structures is measured and a set of measurement data is obtained. Within a numerical range basic input parameters for the parameters α , β and η , are derived from the set of measurement data. A model is fitted by individually changing at least the basic input parameters α , β and η of a control function to measurement data set and thereby obtaining an optimised set of parameters. The correction function is applied to an exposure control of the electron beam lithography system during the exposure of a pattern according to the design data.

17 Claims, 24 Drawing Sheets

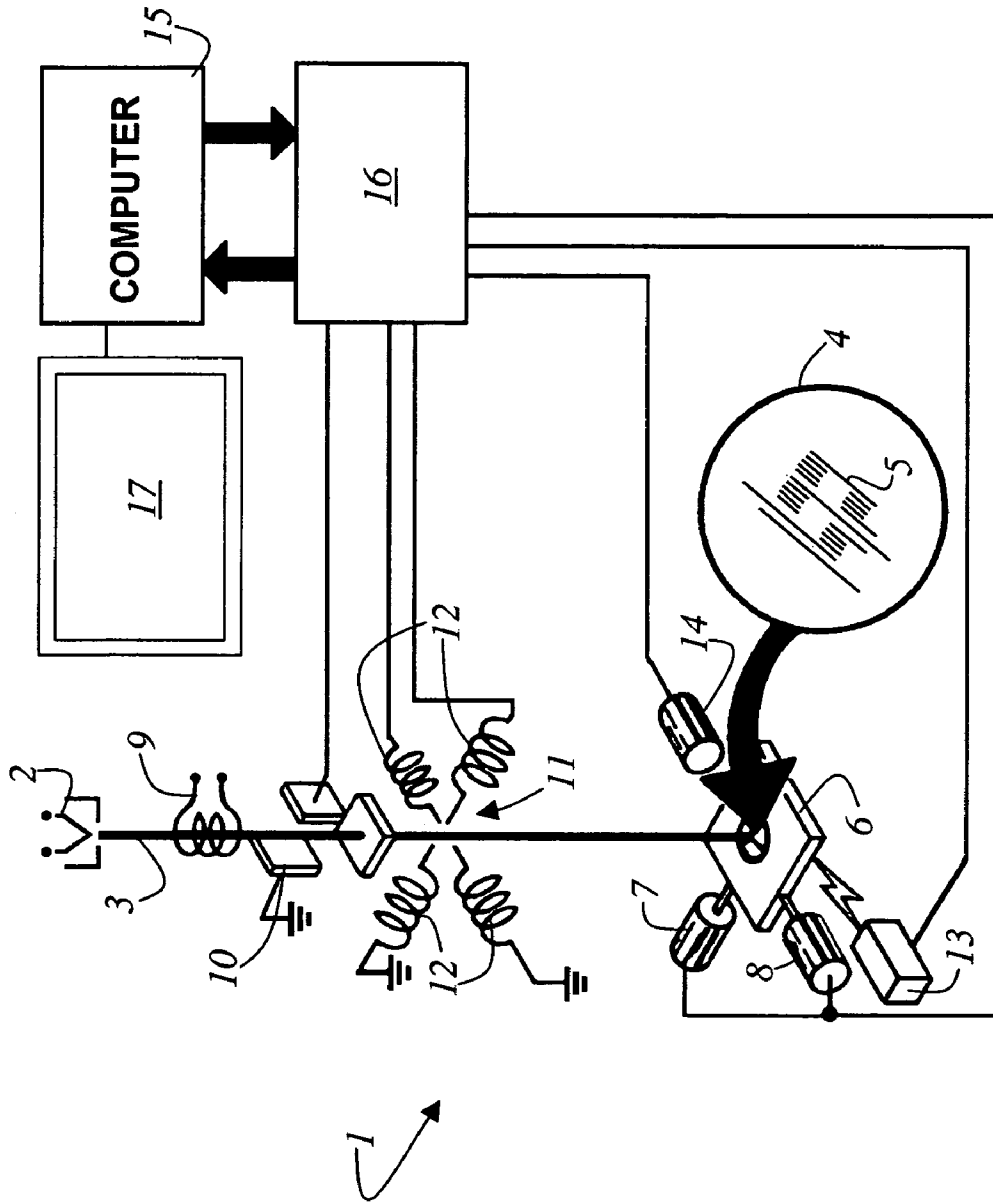


Fig. 1

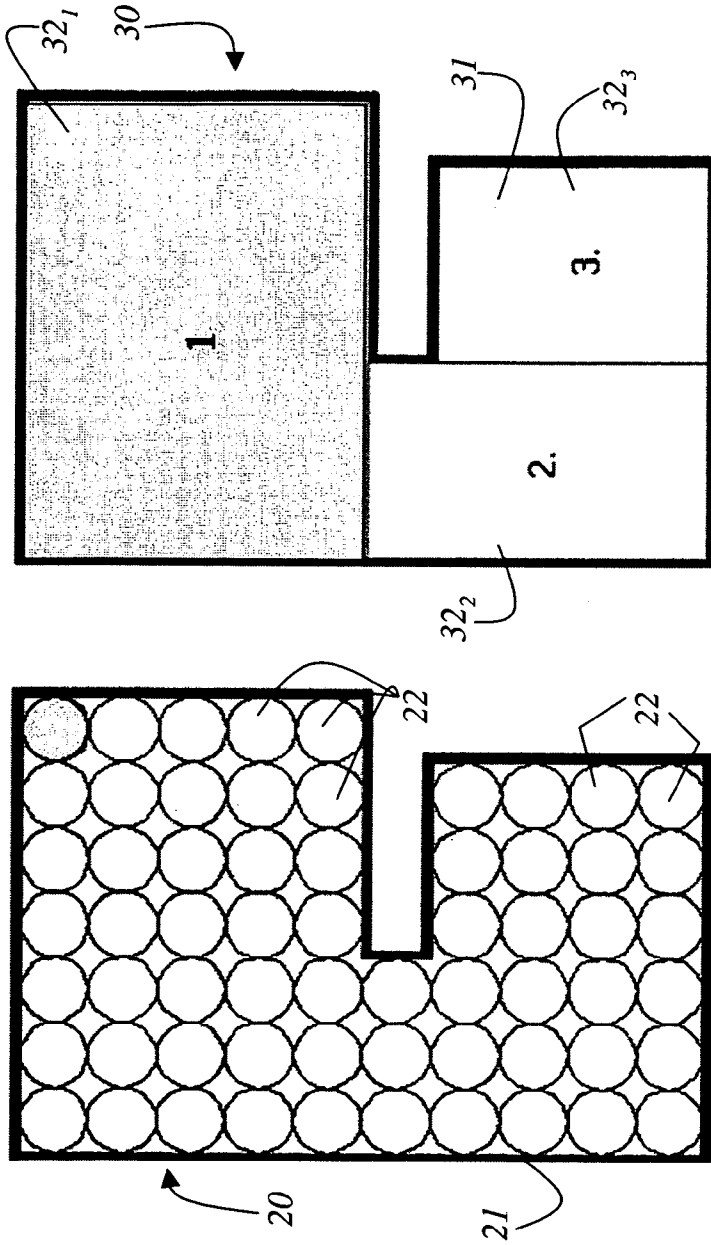


Fig. 3a

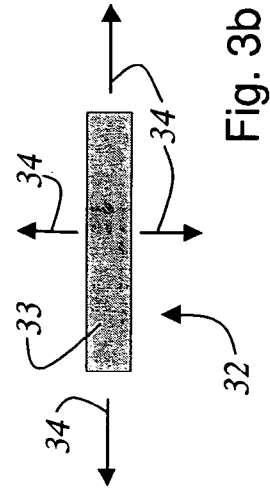


Fig. 3b

Fig. 2a



Fig. 2b

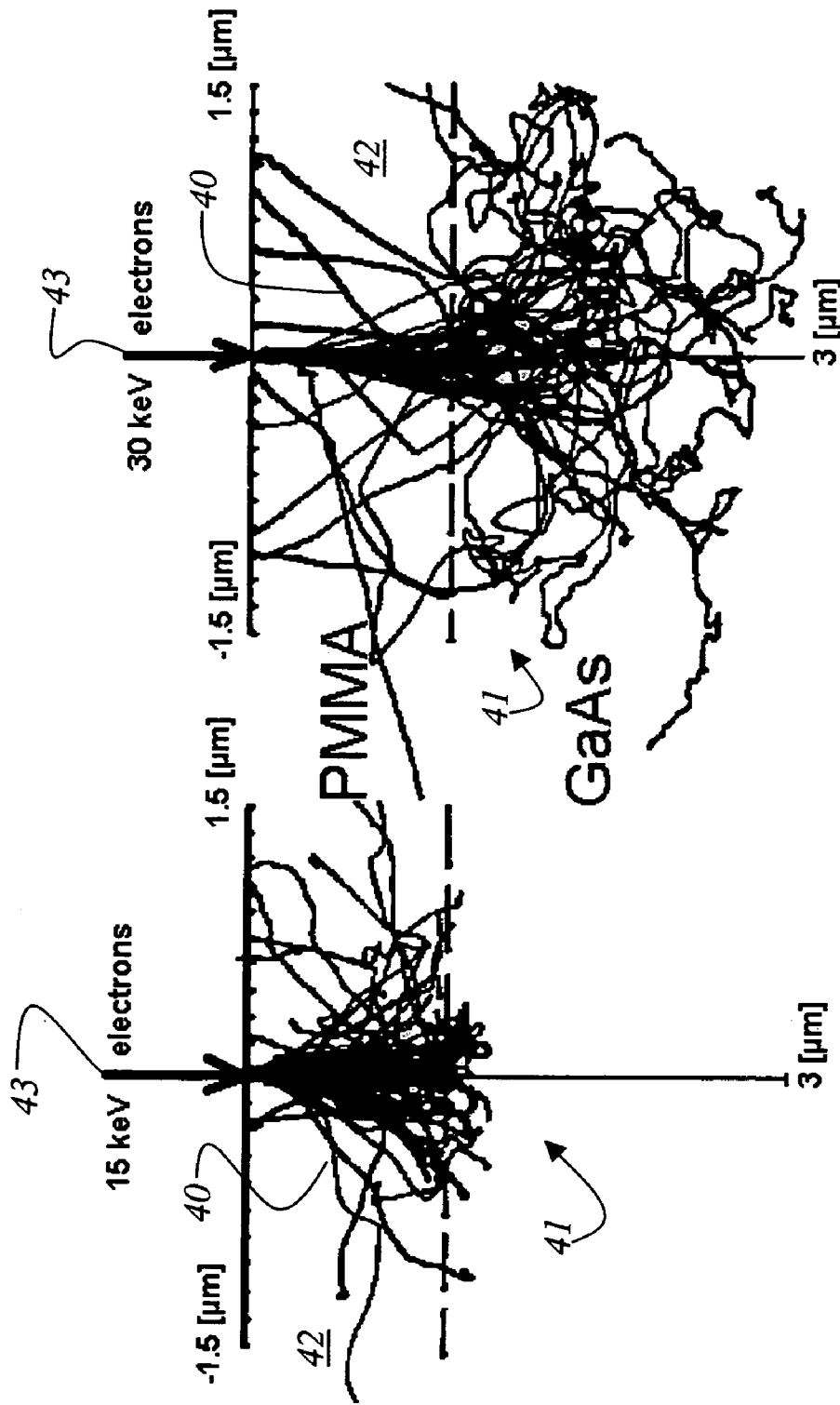


Fig. 4b

Fig. 4a

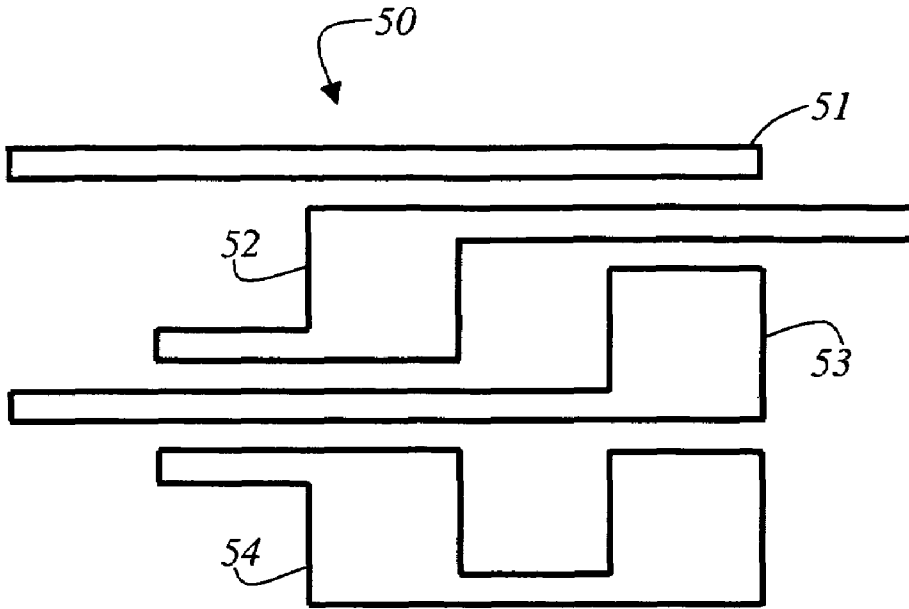


Fig. 5a

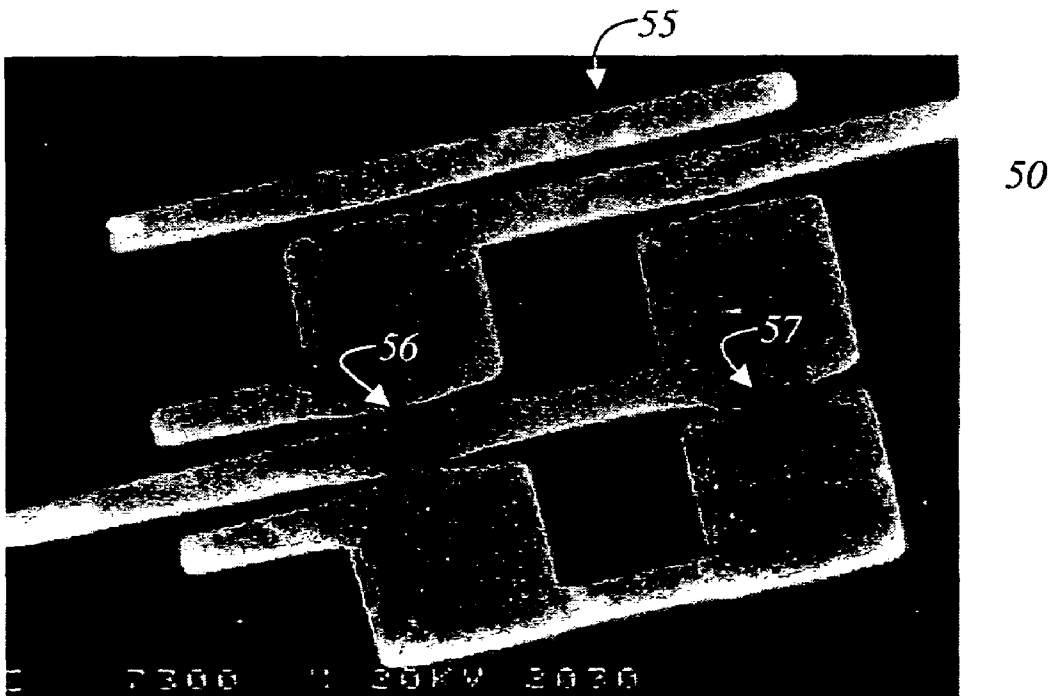


Fig. 5b

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