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# United States Patent [19]

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Uesugi et al.

[45] **Date of Patent:** Oct. 17, 1995

[54] **APPARATUS FOR CALCULATING THE SQUARE ROOT OF THE SUM OF TWO SQUARES**

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[75] Inventors: **Mitsuru Uesugi; Kouichi Honma**, both of Yokohama, Japan

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[73] Assignee: **Matsushita Electric Industrial Co., Ltd.**, Osaka, Japan

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[21] Appl. No.: 277,826

*Primary Examiner*—Tan V. Mai

[22] Filed: Jul. 20, 1994

*Attorney, Agent, or Firm*—Lowe, Price, LeBlanc & Becker

### [30] Foreign Application Priority Data

Aug. 2, 1993 [JP] Japan ..... 5-191099

### [57] ABSTRACT

[51] Int. Cl.<sup>6</sup> ..... **G06F 7/38**

A first digital signal of a serial form is processed into a second digital signal of a serial form. The second digital signal represents an absolute value of a value represented by the first digital signal. A third digital signal of a serial form is processed into a fourth digital signal of a serial form. The fourth digital signal represents an absolute value of a value represented by the third digital signal. The values represented by the first and third digital signals are compared to generate a comparison-result digital signal representing a result of the comparison. A calculation-result digital signal of a serial form is generated in response to the second digital signal, the fourth digital signal, and the comparison-result digital signal. The calculation-result digital signal represents a value which is approximate to a square root of a sum of a square of the value represented by the first digital signal and a square of the value represented by the third digital signal.

[52] U.S. Cl. .... **364/752**

[58] Field of Search ..... 364/752

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**4 Claims, 9 Drawing Sheets**

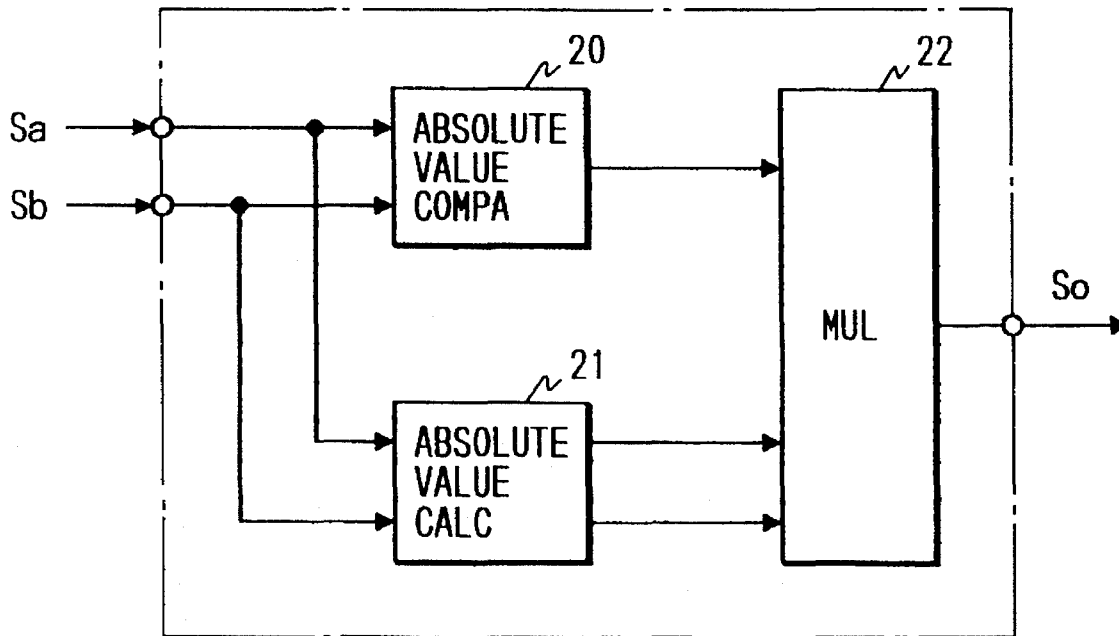


FIG. 1 PRIOR ART

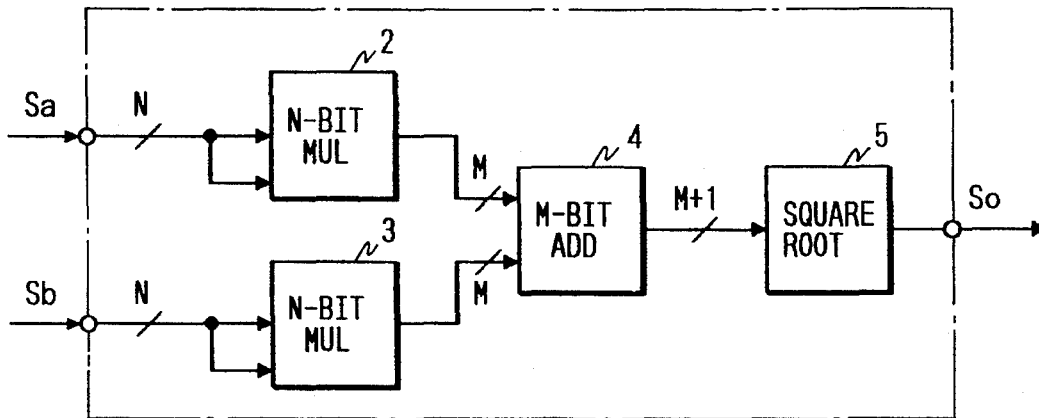


FIG. 2 PRIOR ART

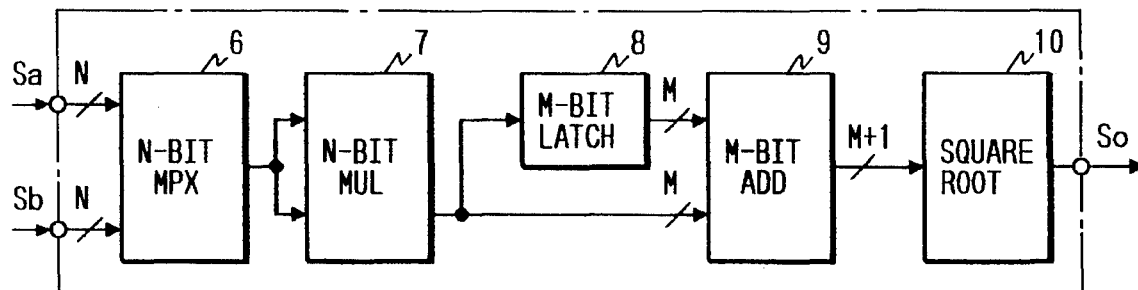


FIG. 3

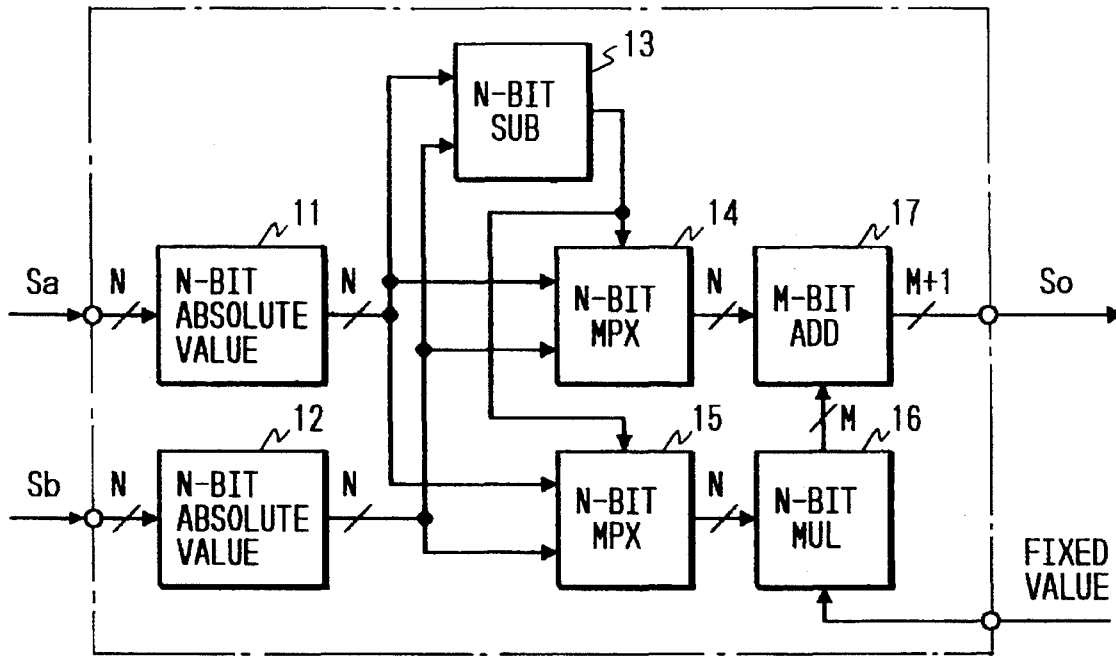


FIG. 4

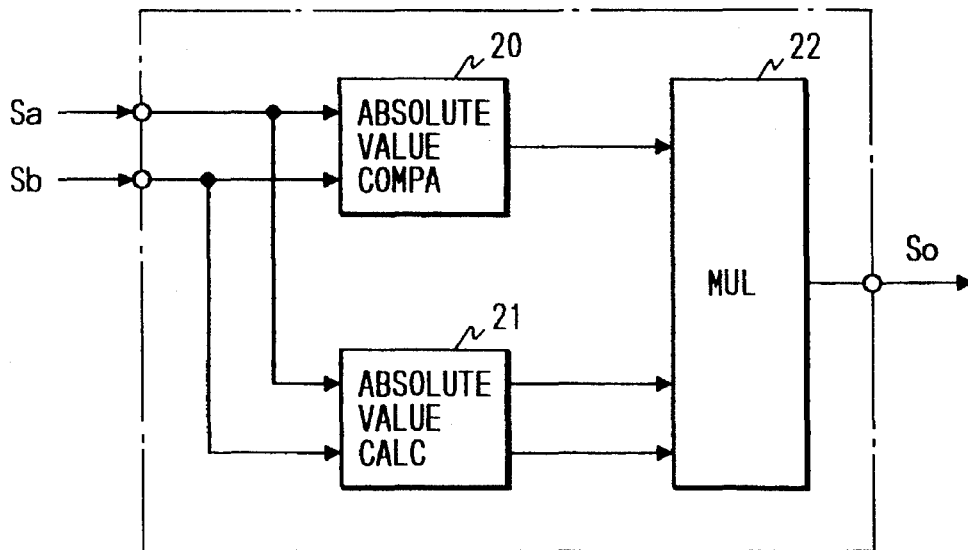


FIG. 5

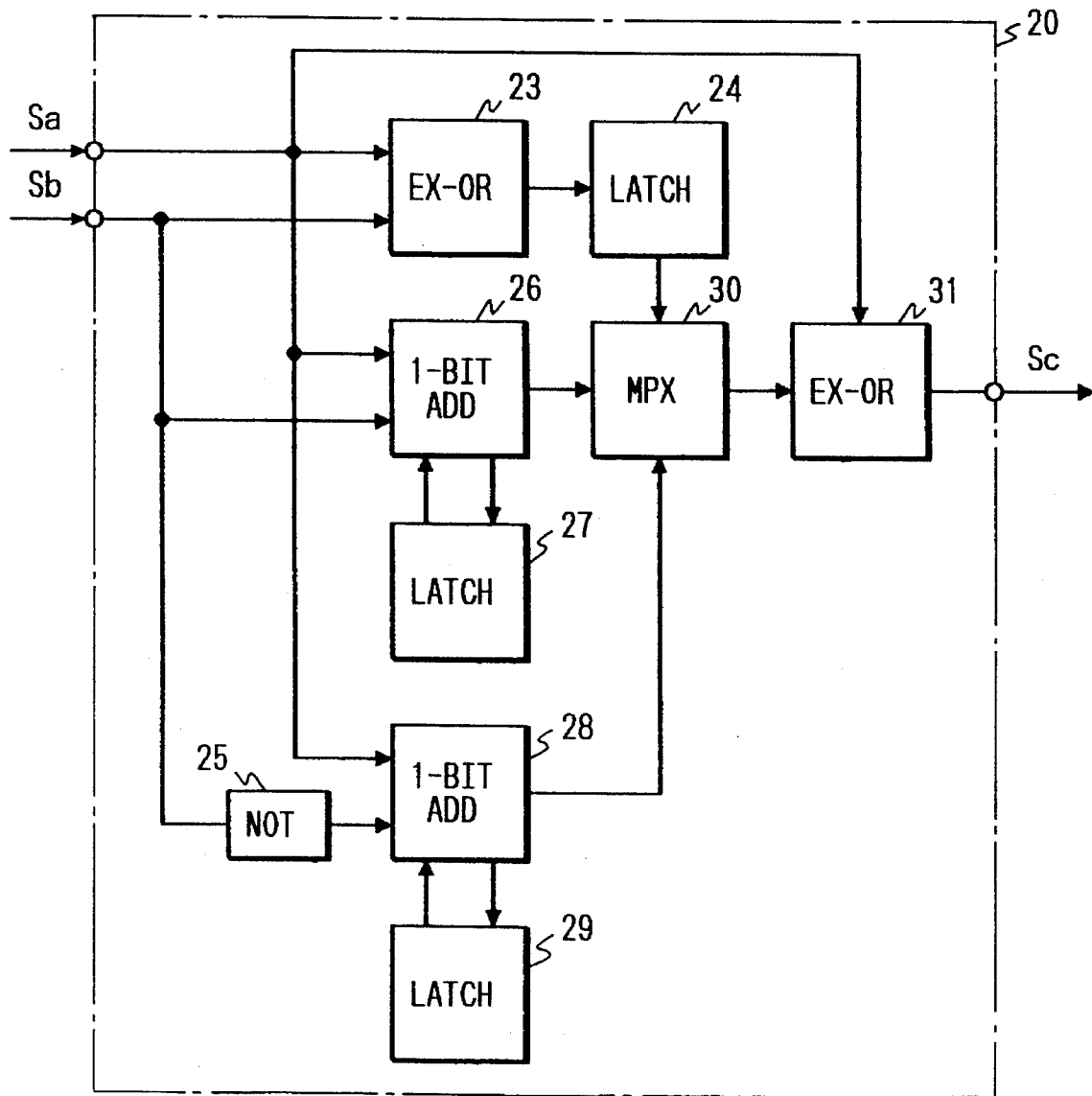
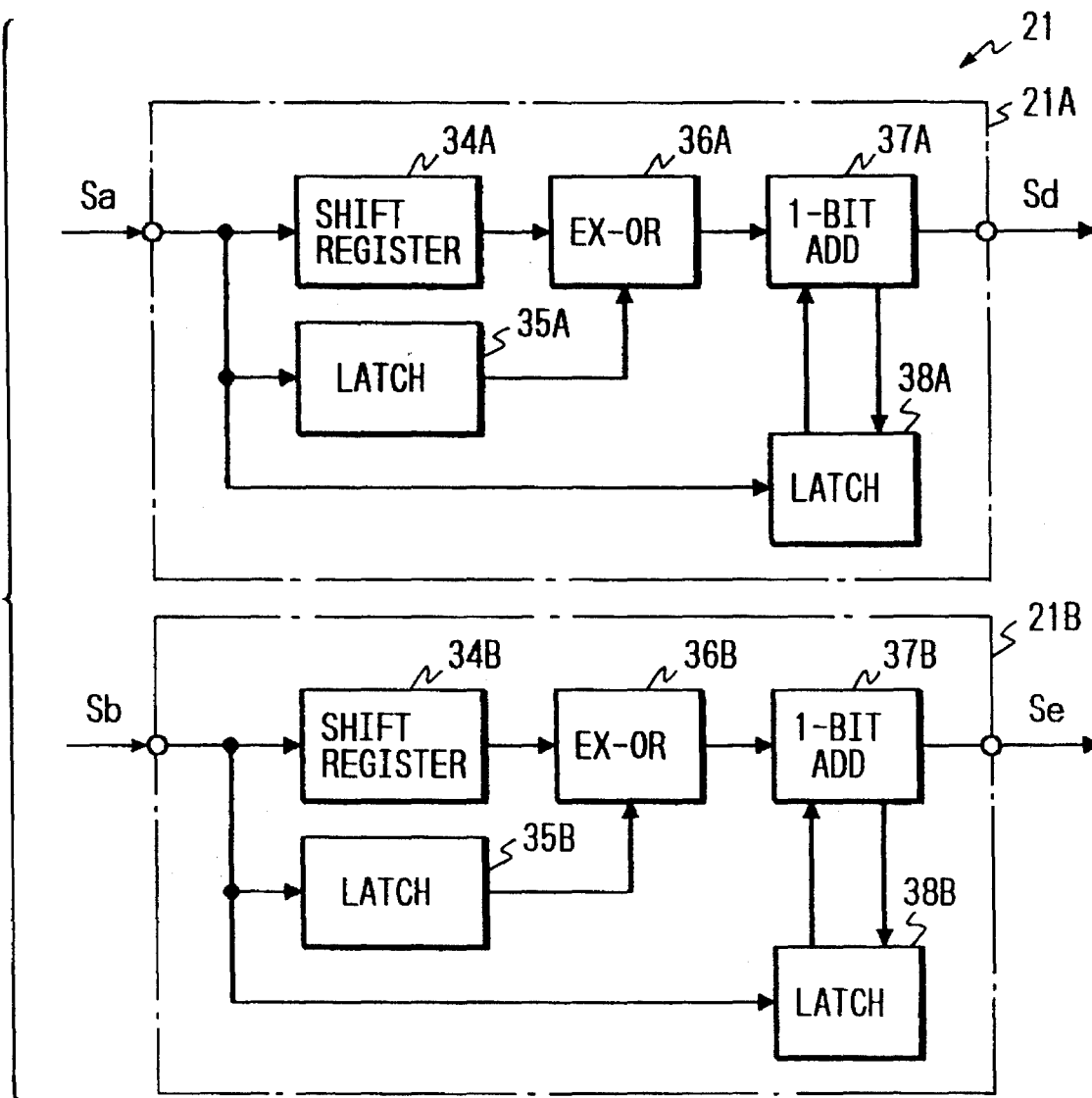


FIG. 6



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