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**Ohtani et al.**

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(54) **MOTION VECTOR DETECTION DEVICE AND MOTION VECTOR DETECTION METHOD**

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(73) Assignee: **Matsushita Electric Industrial Co., Ltd.**, Osaka (JP)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 642 days.

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(51) **Int. Cl.**<sup>7</sup> ..... **H04B 1/66**; G06K 9/46; H04N 9/64; H04N 7/12

(52) **U.S. Cl.** ..... **375/240.16**; 382/236; 348/699; 348/416.1

(58) **Field of Search** ..... 375/240.16, 240.01, 375/240.24, 240.12, 240.23; 348/402.1, 416.1, 169, 699, 700; 382/236, 238, 239

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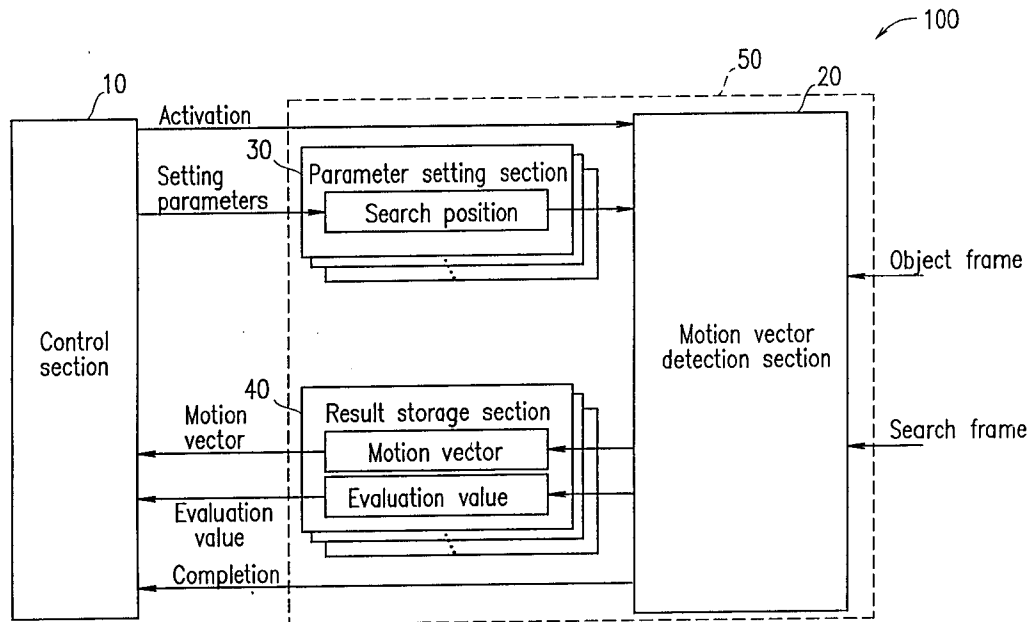
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(57) **ABSTRACT**

A motion vector detection device of the present invention includes: a parameter setting section having parameters relating to N (N is a natural number equal to or greater than 2) search regions obtained by dividing at least a portion of an entire search region in a search frame; a motion vector detection section for calculating an evaluation value which indicates a degree of correlation between an encoded object block in an object frame and a candidate block in one of the N search regions and for calculating a motion vector based on the evaluation value; a result storage section for storing the motion vector and the evaluation value calculated by the motion vector detection section; and a control section for controlling the motion vector detection section to calculate motion vectors and evaluation values for M ( $1 \leq M \leq N$ ) different ones of the N search regions until a predetermined condition is satisfied, for receiving the motion vectors and the evaluation values from the result storage section, and for determining the motion vector for the encoded object block.

**39 Claims, 13 Drawing Sheets**



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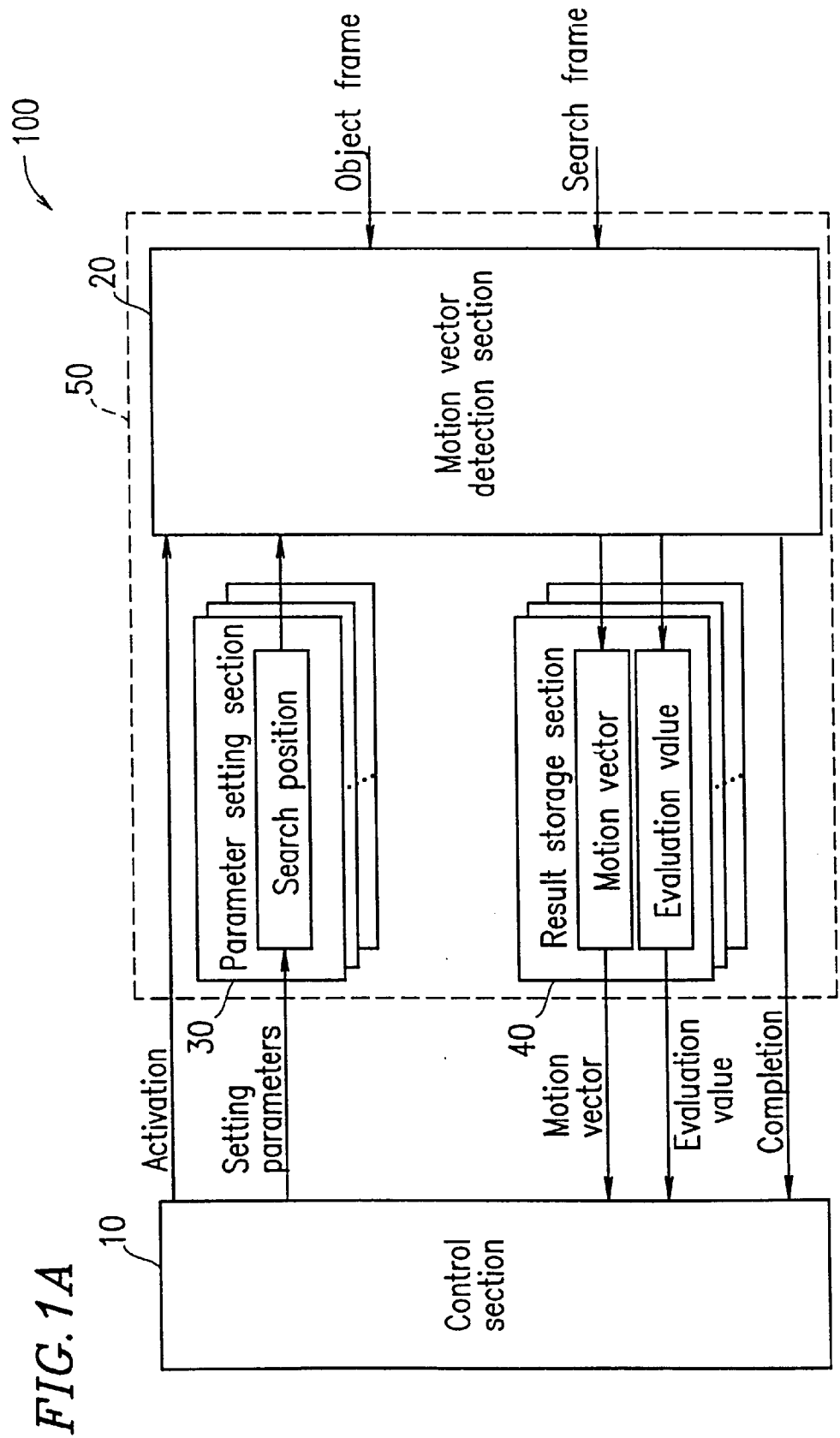


FIG. 1B

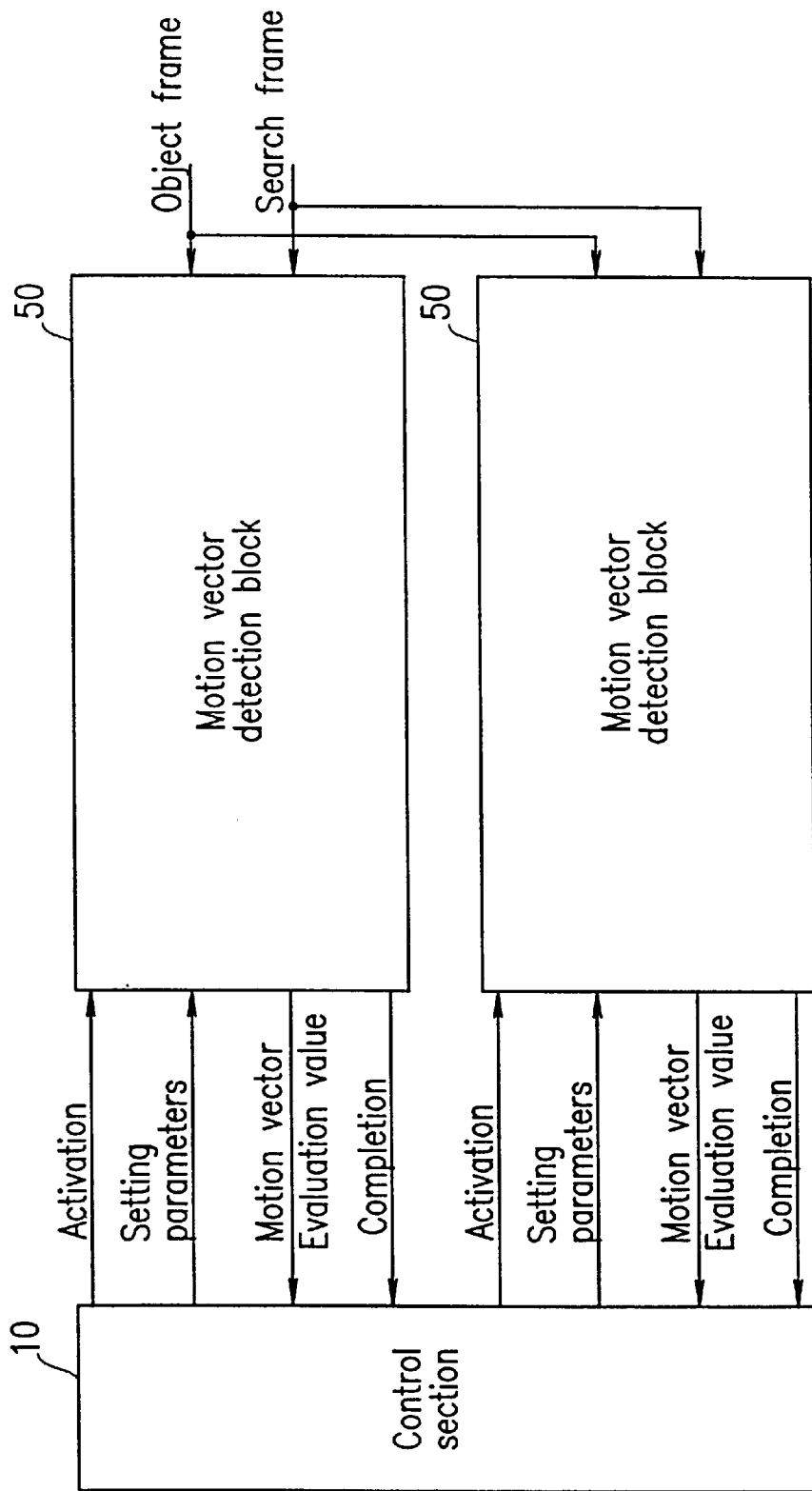


FIG. 2A

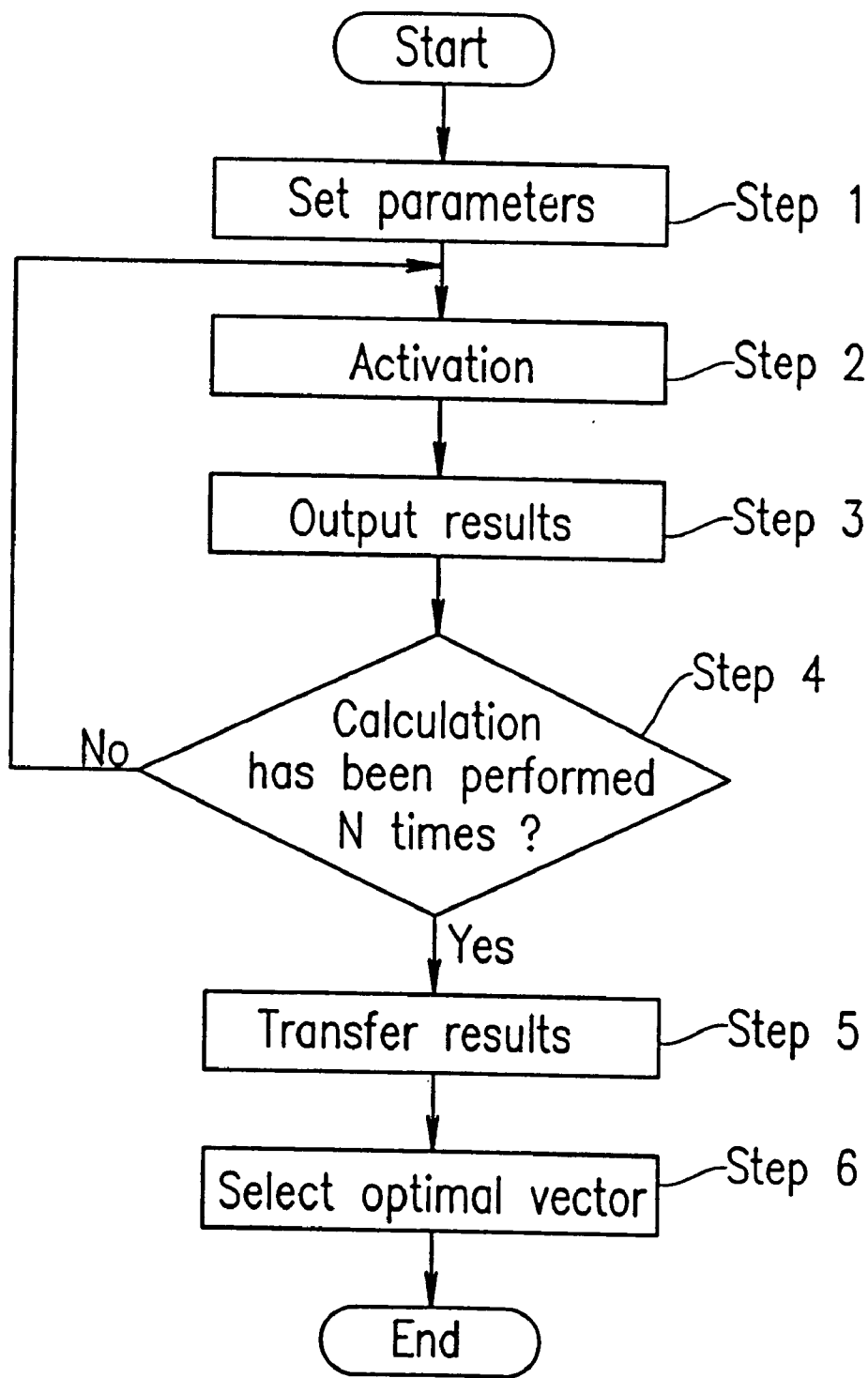
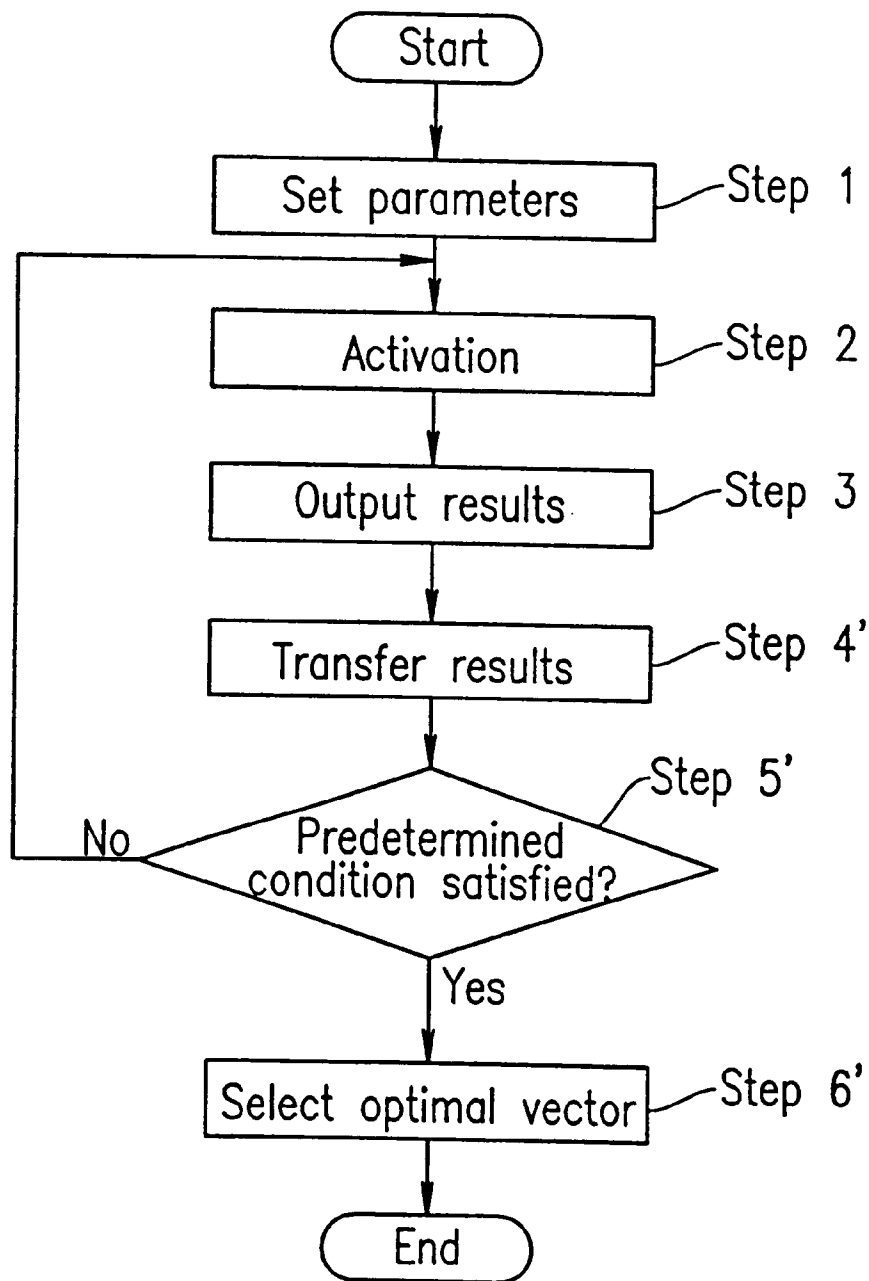


FIG. 2B



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